NEW ZEALAND JOURNAL OF AGRICULTURE

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PUBLISHED BY DIRECTION OF THE MINISTER OF AGRICULTURE.

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THE NEW ZEALAND

JOURNAL OF AGRICULTURE

Vol. 68. No. 3.
March 15, 1944.
Wellington.

Published by direction of Hon. B. Roberts, Minister of Agriculture.

Serpentine Superphosphate

New Fertilizer Vindicated at Meeting of Scientific Workers

AT A RECENT conference of technical officers all aspects of the manufacture and use of serpentine superphosphate were considered, and the results of several years' experiments on farm crops and grassland, and farmers' use of serpentine superphosphate were reviewed.

Officers taking part in the discussions were:—

Department of Agriculture—P. W. Smallfield, Director of the Fields Division (Chairman); J. M. Smith, Superintendent of Services' Vegetable Production; C. J. Hamblyn, Fields Superintendent, Palmerston North; J. W. Woodcock, Fields Superintendent, Dunedin; R. E. R. Grimmett, Chief Agricultural Chemist; A. G. Elliott, Crop Experimentalist; I. L. Elliott, Supervisor of Fertilizer Supplies; G. H. Holford, Supervisor of Serpentine Development.

Department of Scientific and Industrial Research:—F. R. Callaghan, Deputy Secretary; Dr. J. C. Andrews, Council of D.S.I.R.; Dr. L. I. Grange, Director of Soil Survey Division; K. S. Birrell, Soil Chemist, Soil Survey Division.

After a full discussion the conference concluded:—

1. That in general serpentine superphosphate is at least equal to superphosphate as a fertilizer for annual crops and topdressing grassland.

2. That on lime responsive soils, lime is just as necessary with use of serpentine superphosphate as with superphosphate.

3. That there will always be an important place for serpentine superphosphate in New Zealand fertilizer practice.

Comments on Conclusions

1. Over the past four years some hundreds of official experiments have been conducted on crops and pastures and in most of these equal quantities of serpentine superphosphate and superphosphate have been compared. In a number of instances serpentine superphosphate has shown a definite superiority. Where this is not the case there is evidence of a progressive effect from serpentine superphosphate in some areas, more marked than that from straight superphosphate. On all evidence available the conference viewed that weight for weight, and over New Zealand as a whole, serpentine superphosphate will give equal yields to superphosphate.

2. While unlike superphosphate which is acid, serpentine superphosphate is a neutral fertilizer, the conference stressed the point that on lime responsive soils it is still desirable to carry on a normal liming programme. In some quarters there has been an impression that the use of serpentine superphosphate is incompatible with the use of lime. This is quite erroneous as the normal liming practice should be continued.

3. From a study of the characteristics of Dominion soil types and because of the chemical and physical properties of serpentine superphosphate (explained in the Journal of Agriculture, January, 1943) the conference considered that even in the post war period, when it is hoped that New Zealand will have adequate supplies of phosphate, there will be an important place for serpentine superphosphate in our manurial programme on crops and pastures.

The conference also discussed questions of fineness of grinding of serpentine, proper mixing of serpentine and superphosphate, and the adequate processing of the product. It was considered that the regulations set down as to standards for chemical and physical nature of serpentine superphosphate should safeguard the farmer's interest in these directions.

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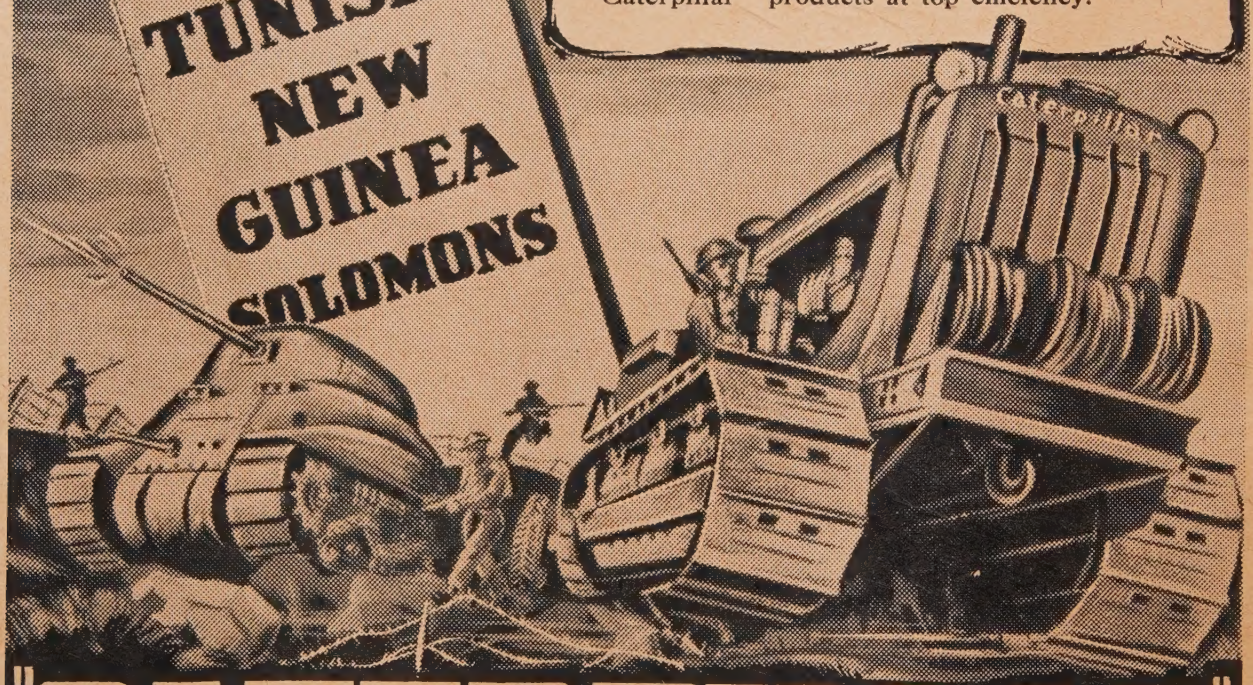

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AUTUMN MANAGEMENT OF PASTURES

By P. S. SYME,
Instructor in Agriculture,
Warkworth

With autumn heralding the end of another dairying year, there is a natural tendency to underestimate the importance of this season and to rate the pasture growth now obtained mainly on its immediate feeding value and its effect on the winding up of the milk yields. Actually, the autumn season is very far from being a dead end. It may, indeed, mark the culmination of the current dairying year, but still more important from the farmer's point of view, the autumn management of the pasture lays the foundation of the production for the year to come. Now, more than at any other time, will good or bad management reap its appropriate reward.

THROUGHOUT the long, hot days of the summer months, excessive evaporation tends to dry out the soil, and the commoner species such as rye-grass and white clover, which form the dominant element of most pastures, ripen off and go into the resting stage. Later, as temperatures fall, lack of soil moisture ceases to be the limiting factor, and the pasture plants again resume active growth. This is commonly a very critical period on many farms, particularly as the increasing amount of feed available tends to obscure the fact that with winter round the corner, the autumn flush must inevitably be of comparatively short duration, and may, indeed, even prove extremely precarious.

Early Feeding-Out

Throughout the main dairying districts, observation will show that considerable reliance is placed on the normal autumn flush and that the feed available at this time is by no means invariably utilised to the best possible advantage. Following a dry summer—particularly where paspalum is not present—the pastures are often very bare, and growth starts from ground level.

Since the rate of growth of any plant is largely dependent on the area of the leaf surface, the growth in the earlier stages is liable to be somewhat slow, and indiscriminate grazing at this time can greatly reduce the potential feed increase over the farm. It is at this period that additional supplementary feed in the form of roots or silage shows to particular advantage. Reserve fodder is very commonly regarded by some farmers purely as a winter reserve which should on no account be broached except in the event of extreme necessity.

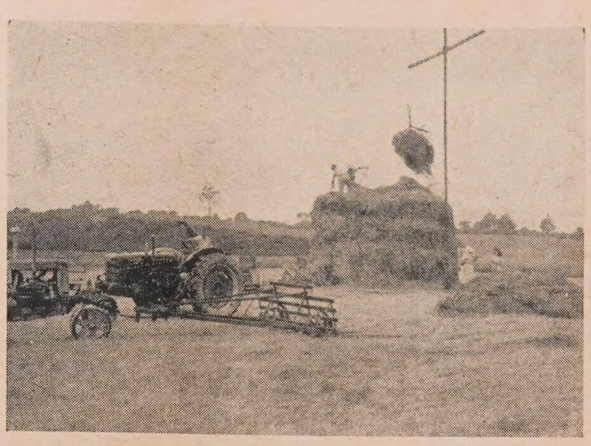
This is, no doubt, a prudent view where the fodder reserve is small. Where more liberal provision has been made, however, it will be found that supplementary feed can sometimes be used to the best advantage before the need for it has actually become apparent. Fed in this way at the critical time, the supplementary feeding eases the drain on the rejuvenating pastures and results in their making much faster growth, so that the production in the autumn period is appreciably increased.

Out-of-Season Grass

The advantages of an increased autumn growth are obvious and are reflected in higher milk production as well as the improvement in the condition of the stock. The latter is an important factor in view of the lean winter days ahead. The benefits do not end here, however. Research and observation have shown that the winter growth is to some extent dependent on the leaf area of the plant, and it will be readily appreciated that the flying start provided by fostering autumn growth of certain selected fields also results in much better winter growth. This in turn, with appropriate management, can again lead to much earlier spring growth.

Apart from the immense "time" value of out-of-season grass, it should be noted that it also permits an appreciable saving of supplementary feed over the winter, so that early—and, at

Well Managed Pastures.



A good reserve of supplementary feed greatly eases the farm management at critical periods.

first sight, unnecessary — use of the feed reserves during the autumn may actually prove in the long run to be highly economical.

Topdressing

Hand in hand with the grazing management and the judicious use of supplementary feeding, the topdressing programme also should be designed to promote autumn and winter growth. While every farmer appreciates the value of artificial fertilizers, the importance of the "time" element in their application is apt to be overlooked. Strange as it may seem, the time of the year at which fertilizer is applied appears to have little effect on the total additional production obtained throughout the year. On the other hand, the time of application does materially affect the period at which this additional production is obtained, and on this account the topdressing programme should be designed according to the object in view.

Early Application

If the intention is to promote autumn and winter growth, it is obvious that the best results are to be expected if the fertilizer is applied early while the soil is still warm and the natural conditions are favourable for an appreciable period of vigorous growth.

If, on the other hand, the topdressing is unduly delayed till the ground becomes cold, it is evident that no immediate response can be expected and little benefit is likely to result until the soil begins to warm up once more in the spring.

It should be noted that, whereas unconsumed spring roughage is practically valueless for winter feed, the autumn growth is still palatable, and is capable of providing a useful winter reserve of high nutritious value.

Perennial Ryegrass

While the parts played by early topdressing and judicious grazing management in contributing to out-of-season growth are both of prime importance, other factors must also be taken into account. Of these, by far the most

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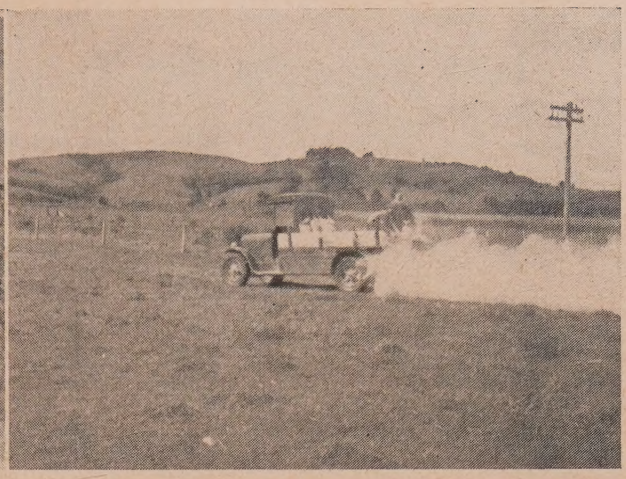

Left: The four roots shown had an aggregate weight of 73 lb. *Right:* On lime deficient soils liming may be just as important as topdressing. This farmer believes in a heavy dressing.

important is the composition of the pasture sward. As every farmer knows, certain species grow best at certain seasons. Paspalum is a specialist having a unique value as a summer producer.

In like manner, prairie grass may also be regarded as a specialist, excelling in the winter and spring months.

From the viewpoint of the general mixed pasture, however, there can be no doubt of the all-round value of perennial ryegrass.

This species, provided it is from a good certified strain, is capable of making excellent growth throughout a long period of the year, and where the fertility is high and the management good, it will even make appreciable winter growth throughout the warmer districts of New Zealand.

For this reason, out-of-season pasture growth on the average farm can as a rule best be fostered in those fields where a high proportion of ryegrass is associated with a high standard of fertility. Factors relating to aspect, shelter, and the soil moisture must also play an obvious part, the last mentioned being of importance both in relation to growth and the suitability of the area for winter grazing.

Value of Lime

In these days when fertilizer is in short supply, many farmers have increasingly resorted to the use of lime as a means of improving farm pastures. That the practice has proved highly successful has been demonstrated beyond all doubt, as shown by the insistent and still unsatisfied demand for lime.

Old traditions die hard, and a half-truth expressed as a trite, easily remembered catch-phrase, can be the cause of almost incalculable harm when misapplied. The old jingles: "Lime enriches the father and impoverishes the son," and "Lime and lime without manure, make both the farm and farmer poor" have long reacted to the detriment of production in New Zealand, and this in spite of much propaganda and the numerous object lessons constantly provided by local practice.

Admittedly, the latter saying has a measure of truth when applied to intensive rotational farming. When applied to permanent pasture on the other hand, the position is altogether different, and on lime-deficient soils it is doubtful whether even relatively heavy applications have ever done anything but good. Indeed, it might rightly be claimed that in view of the importance of the clover elements, no pasture can ever hope to reach its potential standard of production where the supply of lime is insufficient.

Surface Sowing

Before the war curtailed the amount of fertilizer available, many farmers regularly adopted the practice of sow-

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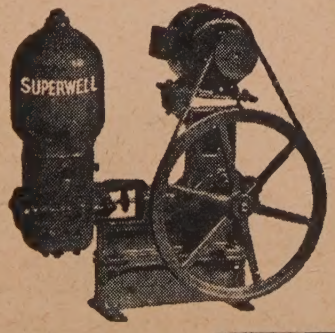

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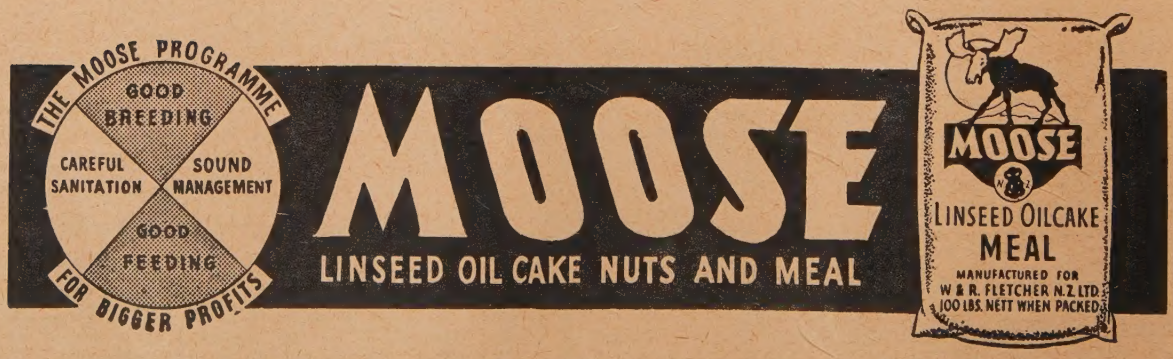
This added value is equivalent to 14/- worth of Sulphate of Potash, 13/4 worth of bone flour, and £3/18/6 worth of dried blood. The food value of Moose therefore costs you NETT, only £12/10/- per ton fed.

This will help to solve next season's topdressing problem.

But it will solve ANOTHER problem—next season's critical feeding period when Moose concentrates will save the situation.

As the season advances, however, the demand for Moose AS A FOOD will create a supply shortage. Be wise and order your Moose NOW—and get both FOOD value and potential manurial value. No other concentrate offers such value in both.



ing selected seeds along with the autumn topdressing. Although the results obtained were not usually spectacular, there can be no doubt whatever that many of the poorer pastures were eventually considerably improved in this way.

Since no extra labour was involved, and the cost was limited to the price of a few pounds of seeds, even if only a relatively small percentage of these established as plants, the sowing could be well justified by the results obtained. The practice has been perhaps most successfully used where it was desired to increase the proportions of such species as white clover, subterranean clover and lotus major.

Grasses are also sometimes sown with the clovers, but experience suggests that the sowing of high fertility-demanding grasses is best deferred until the clovers have become well established and have raised the fertility to the requisite level.

The sowings usually range from a few ounces up to several pounds per acre, the best results usually being obtained when the seed is applied late, rather than early in the season, since mortality on an unprepared seed bed is apt to be heavy if the soil suddenly dries up in hot weather.

It is an advantage if the ground can be well harrowed after the sowing, though this of course adds to the cost and may not be economic unless regarded as part of the routine work of pasture management.

Nature's Way

Where the sward is inclined to be thin, but still contains an appreciable proportion of the better grasses and is reasonably free from weeds, lenient grazing, which will permit the plants to ripen and shed their seeds, has frequently been attended by spectacular success. Considering that the quantity of seed shed in this way may amount to a very heavy sowing rate per acre, while the shelter afforded by the parent plants assists the establishment, it is not surprising that the regeneration is often so conspicuously successful. Needless to say, liberal topdressing and suitable subsequent management are essential for success.

Harrowing

While topdressing and grazing control both have an important role in pasture management, the part played by the humble grassland harrow, though less spectacular, is none the less real. Even in the pre-war days of lavish topdressing, nature's contribution of animal droppings vitally affected the vigour and well-being of the sward.

To-day, with artificial fertilizers in short supply, the need to make the very most of nature's return of fertility is more imperative than ever. Although deep-penetrating harrows may possibly be used to special advantage in combating fog or on poor, mossy or sod-bound turf—particularly where associated with surface sowings—carefully devised experiments have shown beyond all doubt that on good pasture the main function of the harrow is simply to break up and spread the droppings evenly over the ground.

To achieve this, the draught need not be heavy, and considerable economy of labour may be effected by harrowing behind the topdresser or by using a specially designed wide type of harrow capable of exploiting the speedy mechanical power available on so many farms to-day.

Competent observers have frequently proclaimed that the best New Zealand permanent pastures are the best in the world. It must, however, be admitted that the gap between the good farmer and the indifferent farmer is a wide one. This difference may sometimes be due to lack of finance rather than to any lack of effort or knowledge, but even so, there can be no doubt that in the long run the main deciding factor between success and failure is "management."

Field Pea and Sweet Blue Lupin

Application for Seed

THE Department of Agriculture expects to have available for distribution in time for sowing next spring, limited quantities of the following seeds, and is at present accepting applications on the conditions set out below.

Mammoth Blue Field Pea

White Prolific Field Pea

These two peas were described in the Journal of Agriculture, December, 1942.

Sweet Blue Lupin

Described in Journal of Agriculture, August, 1942.

Conditions governing application for these seeds are as follows:—

1. Applications must be made through mercantile firms stating:—

(a) Name and address of farmer.

(b) Acreage of individual paddock or paddocks for which seed required.

(c) Quantity of seed required.

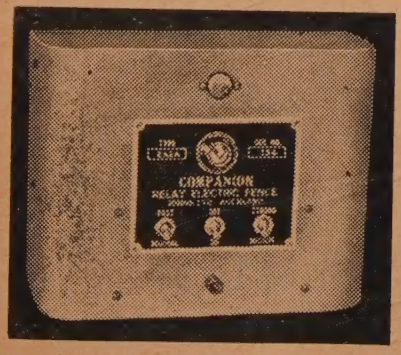
2. All applications to hand at April 30 will receive consideration when allocating the seed available and in making allocations the right is reserved to give preference to those applicants who, in the opinion of the Department, will make the best utilisation of the seed available.

3. As soon as possible after April 30 merchants will be advised of allocations made to them, together with the price of the seed. Deliveries will be made upon confirmation of the allocation by the merchant.

4. The seed delivered will bear the endorsement of the Department's seed certification scheme.

In the case of the field peas, areas sown with seed supplied by the Department will **not** be eligible for entry into certification, but in the case of the sweet blue lupins, the areas sown will be eligible for certification and growers will be expected to avail themselves of this opportunity to produce certified seed.

—J. H. CLARIDGE,
Seed Certification Officer,
Wellington.



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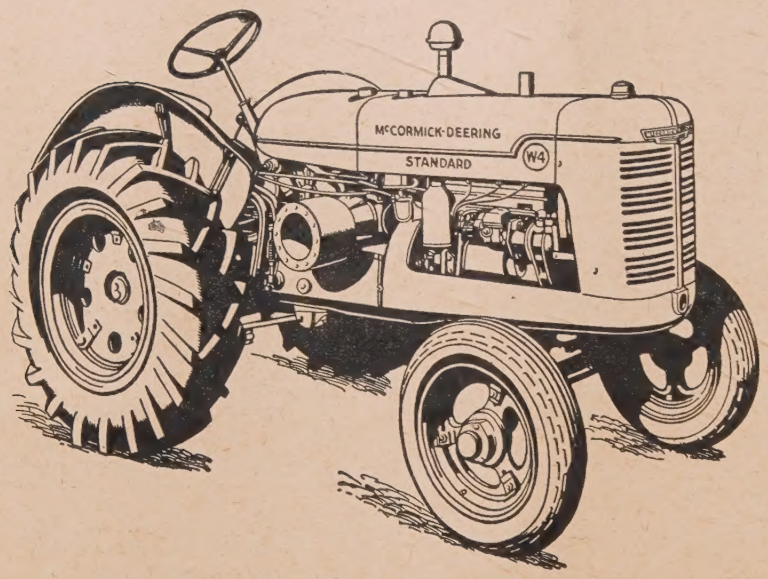

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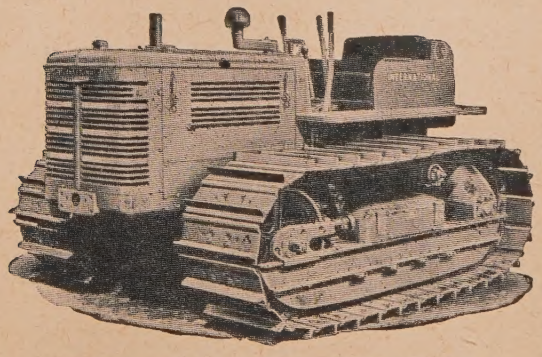

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STUDIES IN FARM MANAGEMENT

A Cheviot Mixed Farm

FARM management methods vary considerably in different parts of the Dominion and the following description of a mixed farm in Cheviot County is the first of a series of studies which will cover the management methods adopted in the chief branches of pastoral, mixed and dairy farming.

— By —

P. R. BARRER,
Instructor in Agriculture,
Rangiora

BOTH pastoral and mixed farming are practised on the 175,000 acres of occupied land in Cheviot County. The hill country is devoted to pastoral farming, and mixed farming is practised on an inland basin lying between the Waiau River in the north, the Hurunui River in the south, the Seaward range in the east and the Kaiwara range in the west.

The soils of the mixed farming area vary from a rich heavy silt to light clay loams. Domett in the south of the area has an elevation of 188 feet above sea level and Spotswood in the north an elevation of 109 feet, and the area in general varies from 100 to 200 feet above sea level. Lying as it does in an inland basin the area is subject to heavy frosts in the winter. Rainfall figures taken at Caverhill, which is nearer the coast and at a higher elevation than the Domett-Spotswood area and which probably receives more rain than this area, show a mean annual rainfall for the past nine years of 37.06 inches.

TABLE 1—RAINFALL AT CAVERHILL.

Year.	Inches Rainfall.
1935	21.83
1936	39.72
1937	36.10
1938	36.42
1939	36.89
1940	34.52
1941	50.72
1942	39.08
1943	38.24
Average for 9 years	37.06

Annual Crops

The chief annual crops grown in Cheviot County are:—

1. Cereal crops, mainly wheat for threshing, oats for chaff, and oats for green feed.
2. Brassica crops for supplementary feeding, mainly rape and turnips.
3. Grass seed crops.

TABLE 2.—GRAIN & PULSE CROPS IN CHEVIOT COUNTY (Acres).

Crop—	Seasons. 1935/36.	1938/39.	1941/42.
Wheat	1,414	990	2,849
Oats—			
Threshing	452	136	81
Chaff	2,067	1,214	1,020
Greenfeed	452	772	1,054
Barley—			
Threshing	86	22	48
Feed	123	48	72
Peas	48	94	399
Other grain & pulse	5	19	25
	4,647	3,295	5,548

The main features in table 2 are the increase in the area of wheat in the 1941/42 season owing to war needs; the general decrease in the area of oats for threshing and for chaff; and an increase in the area of peas grown in the district. Other crops are of negligible importance.

Lambs in rape at Mina.

Typical rolling farm-land at Monoti.

Montgomery red clover at Spotswood.

Culinary mustard in stook at Spotswood.

Harvesting a wheat crop at Domett.

A seven-year stand of lucerne at Domett.

TABLE 3.—GREEN, ROOT & OTHER CROPS IN CHEVIOT COUNTY (Acres).

Crop.	Seasons. 1935/36.	1938/39.	1941/42.
Rape & Chou Moellier	2,625	2,227	2,571
Turnips	2,023	1,155	1,518
Turnips and Rape ..	316	378	257
Mangels	89	46	38
Potatoes	59	39	26
	5,112	3,845	4,410

From table 3 it may be seen that, apart from some decline in the area of turnips, there have been no recent major changes in the growing of supplementary feed crops. Potatoes are not grown on a substantial scale.

TABLE 4.—GRASSES AND CLOVERS IN CHEVIOT COUNTY (Acres).

Crop.	Seasons. 1935/36.	1938/39.	1941/42.
Grasses & clovers cut for seed—			
Perennial ryegrass	435	548	718
Red clover	95	137	266
White clover ..	35	136	122
Others	109	224	26
Grasses & clovers cut for hay	986	949	870
Grasses & clovers sown since Jan. 31 ..	4,115	3,770	4,184

Table 4 demonstrates that there is a trend towards small seed production. The area sown annually to pasture does not show appreciable change.

A CHEVIOT MIXED FARM.

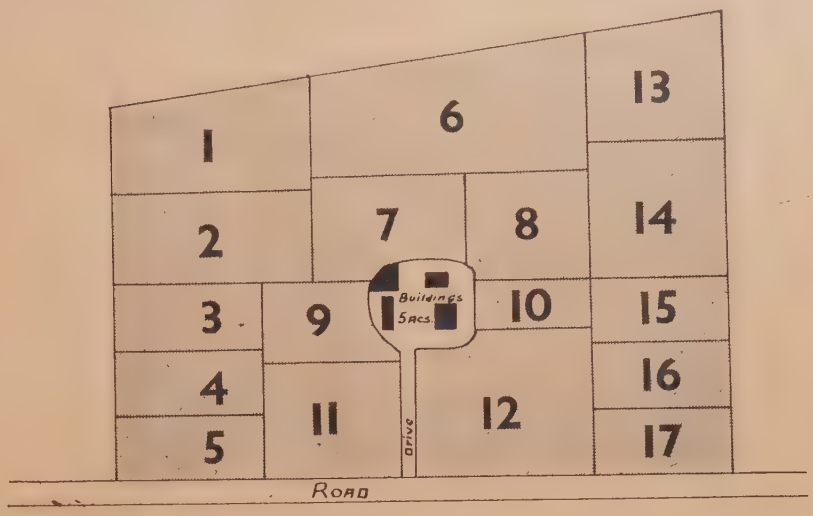
The following particulars relate to an individual mixed farm of the Cheviot district which may be classed as slightly better than the average. It can be regarded as a progressive farm and on which there may be certain departures from standard practices, but nevertheless is broadly typical of sound farm practice in the district. It is not possible accurately to define an "average" farm in any particular district, for not only are there individual differences on every farm, but on the same farm there are departures from one year to another in both policy and management. According to statistics an "average" farm in the Cheviot district might be taken as one which, among other things, worked a four-horse team and grew its own oats for chaff. On the other hand, the farm described works a tractor and grows oats only for green feed. The description of the operation of this farm serves to show how fat lamb production is associated in farm practice with the profitable growing of wheat and small seeds. The proportion of the farm in wheat, namely one quarter, may be taken partly as an indication of a war measure but also partly as the normal procedure in the renewal of pastures.

The area of the farm is 250 acres of medium clay loam overlying a clay subsoil, and carrying 420 three-quarterbred ewes. The farm is a one-man farm run with the assistance of casual labour for seasonal operations, and the power unit a tractor.

Buying and Selling Policy: On this farm the policy is to buy in cast-for-age four and five year old ewes from the hill country sheep farms with possibly a certain number of cull two-tooths from the same source. The four-

PLAN OF FARM — 250 ACRES.

Showing crops occupying fields as at January of season under review.



1. 25 acres wheat.
2. 21 acres pasture.
3. 12 acres hay.
4. 12 acres white clover seed.
5. 12 acres ryegrass seed.
6. 26 acres pasture.
7. 13 acres ryegrass seed.
8. 10 acres pasture.
9. 10 acres pasture.
10. 6 acres white clover seed.
11. 15 acres wheat.
12. 18 acres pasture.
13. 20 acres wheat.
14. 15 acres rape.
15. 10 acres Montgomery red clover seed.
16. 10 acres chou moellier.
17. 10 acres pasture.

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year-olds are replaced every two years and the five-year-olds after one season; these old ewes are fattened ready for the butcher at about the same time as the replacement stock are bought in, thus maintaining a constant flock number through the year, or allowing an increase or decrease in stock numbers according to the cropping position.

Flock Management: Southdown rams are used for the production of the fat lamb cross. They go out in the third week of March, the replacement ewes being brought in some time in March and lambing consequently starts about the middle of August. The lambing percentage averages 115 per cent. The lambs are weaned early in January when the rape crop is ready. Some lambs will be sold fat off the mothers, the remainder being fattened on the rape. The ewe flock yields a wool clip of 9lb. per head.

Grassland Management: During the winter all the grassland area is available to the ewe flock, the paddocks being fed off in rotation. In the late spring-early summer period the area available is restricted by the shutting up of areas for seed and hay production. The full area is again available for stock in late January, with the exception of any Montgomery red clover paddock. The shutting up of these areas at the period of the "flush" of growth allows the maximum utilization of the pastures, growth being adequate on the smaller area then available for the requirements of stock. Grass growth is insufficient for the flock in the winter-early spring period and in the late summer-early autumn period. Additional provision of feed has to be made for these times.

Supplementary Feeding: To supplement grass growth in periods of shortage, green feed and fodder crops have to be grown and hay saved. For the fattening of lambs in the summer period an area of 15 acres of rape is grown, ready to be fed off from January onwards. It is expected to fatten on this area of rape all those lambs which have not gone away fat off the mothers. If the crop is a good one it may be possible to buy and fatten extra lambs. At the end of January the areas shut for seed and hay have mostly been made available for stock again.

From about March onwards through the winter extra feed for the ewe flock is obtained from 10 acres of chou moellier. For the months of June, July, and August, hay saved from a paddock of 12 acres is also fed out to supplement the grass and chou moellier. An area of 40 acres of green feed oats is also grown to provide later winter feed and for grazing by the early lambing ewes.

Topdressing and Liming: The area topdressed and limed will of course vary from year to year according to the area under the plough and to the previous manurial treatment of the paddocks in grass. In the year under review 50 tons of lime were topdressed on 75 acres of land, 25 tons on 25 acres which had not been previously limed, and 25 tons on 50 acres which had had previous dressings. With the fertiliser available under wartime rationing, superphosphate at one hundredweight per acre was available for only one paddock of 12 acres, in addition to the areas of new grass and crop which also receive the regulation

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dressings. The paddock topdressed was the one to be used for the production of a hay crop.

Grass and Clover Seed Production: During October two paddocks totalling 25 acres which were to be saved for perennial ryegrass seed production were closed to stock. At the end of October two further fields totalling 18 acres which were to be saved for white clover seed production were also closed to stock. These paddocks were closely and evenly grazed before they were shut up. A paddock of 10 acres of Montgomery red clover was also shut up at the end of November. The ryegrass paddocks were harvested and ready for stocking by the middle of January and the white clover paddocks by the end of January, but the Montgomery red clover area will not be clear for feeding till April at the earliest. The average yields expected are 25 bushels of field-dressed ryegrass and anything upwards of half a bag of white clover and of Montgomery red clover to the acre.

Hay: A paddock of 12 acres was shut up in October for hay and was harvested in early December, yielding 20 tons of meadow hay. Valuable feed is obtained in the late summer-early autumn period from the aftermath of hay and seed crops.

CEREAL AND FODDER CROPS.

Wheat: The area of wheat grown was 60 acres, made up of three paddocks of 25, 20 and 15 acres respectively. Of these areas the 25-acre paddock was previously in wheat, that of 20 acres previously in rape, and that of 15 acres in grass. In preparation for the wheat all the areas were turned over in ample time to allow for the preparation of the land for the sowing of the Cross 7 variety in May. The crops were header-harvested in January, and the stubble ploughed soon afterwards. The average yield expected is 40 bushels to the acre.

The 25-acre paddock will be sown in green feed oats in the autumn for late winter-early spring feed and then into grass after a summer fallow. The 20-acre paddock will be sown in a further crop of wheat. The 15-acre paddock will go into rape in the late spring.

Rape: A paddock of 15 acres which was in green feed oats after a crop of wheat was sown in rape at the beginning of November. This crop was then ready for feeding by the middle of January, and the paddock will be sown in wheat in the following year.

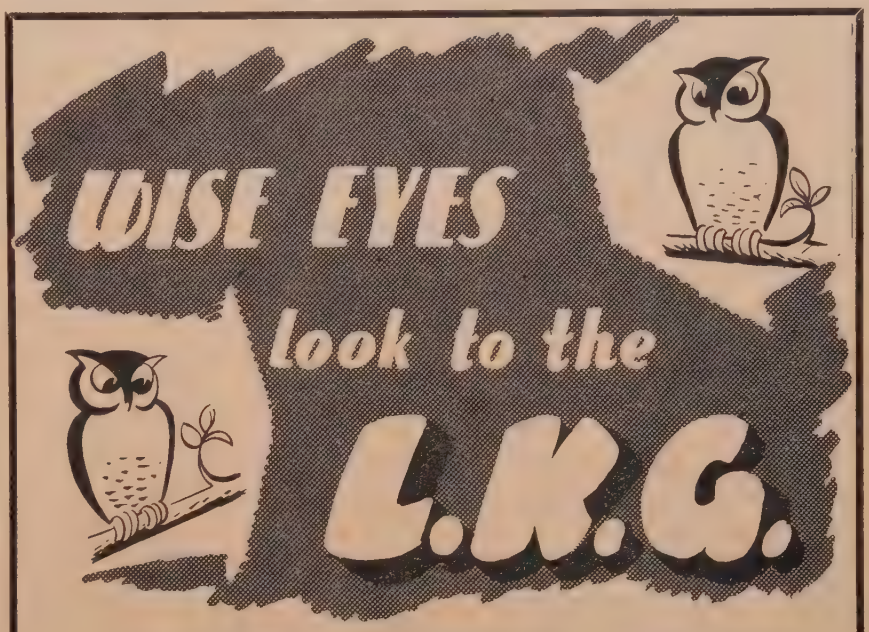
Chou Moellier: An area of 10 acres was ploughed out of grass for the sowing of chou moellier in October or November. This crop will be utilized for late autumn and winter feed for the ewe flock, and may be ready for the first feeding off in March, depending on the season. Following the chou moellier crop the area will be sown in peas the following spring.

Green Feed Oats: The paddock of 15 acres mentioned as being sown in rape in the spring has previously been sown to green feed oats in the autumn for late winter and early spring green feed for the early lambing ewes.

New Grass: No areas are sown in new grass in the season under review, but the following season the 25-acre paddock at present in wheat will be sown in green feed oats for the winter, deep ploughed in October, and worked up after a summer fallow for grass seed sowing by the end of January. The seed mixture used is: 25 to 30 lb. certified perennial ryegrass and 3lb. certified white clover. Before sowing the paddock receives a dressing of lime and one hundredweight of superphosphate is sown with the seed.

Conclusion

The description of this mixed farm demonstrates how the incorporation of payable cash crops, mainly wheat, into a suitable rotation makes more profitable the growing of supplementary fodder crops, and the whole cropping scheme can be readily fitted into the programme for fat lamb production and the growing of small seeds. The crop rotation makes less costly the necessary renewal of pastures.



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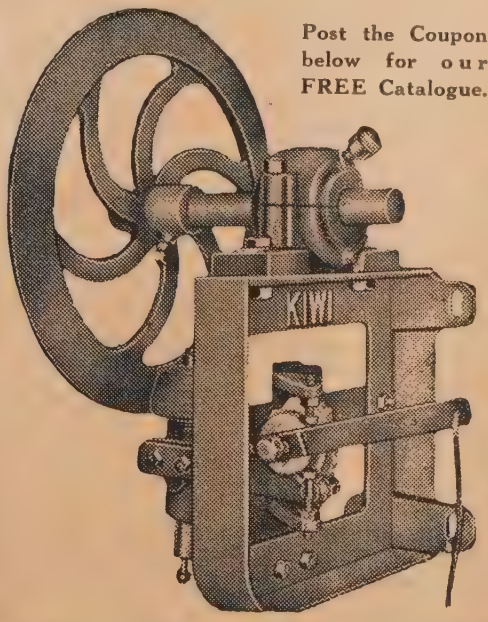

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Winter Feed Supply for Pigs

While it is comparatively easy to feed pigs profitably in the summer, when there is an abundance of dairy by-products, winter feeding calls for systematic planning. To make a success of pig-keeping, breeding stock and store pigs must be provided for in the winter months, when only roots and forage crops grown on the farm, or imported grains and mixed meals, are the only supplies.

— By —
H. M. PEIRSON,
Acting Superintendent of the Pig Industry, Wellington

HOWEVER much many people would like to believe otherwise, there is no passing over the fact that a sound policy of pig production demands an increased area of crops for pigs. Because dairy by-products appear to be costless there is a tendency to waste them, and any increase in pig production at the present time, owing to the inability of Australia to meet our requirements of grain for pig feeding can only be brought about by growing and using more winter crops.

The large numbers of underweight porkers killed late in the season, and the high-priced store pigs from August to December, are evidence of an inefficient winter feed supply. Producers are treading on tempting but dangerous ground when they seek to remedy this evil by importing grains and meals from Australia. There is no doubt that by this means increased production could be obtained, but the cost of such a policy could have little, if any, real profits for the producer who bought grain excessively.

It is appreciated that grain consumption by pigs is highly desirable and could be doubled, but little profit would result from doubling it, unless the root consumption were more than doubled.

Many producers will protest that it is more profitable to leave their land in grass for cow feed, and there are circumstances under which this contention is right. Even they could, with advantage, make much more use of grazing, fed in conjunction with small quantities of high quality meals, for both breeding stock and winter stores.

Supplementary Feed

To fully use the dairy by-products as they become available in summer, one-third of the total pigs slaughtered, together with the breeding stock, has to be carried through the winter months on supplementary feed, grown or purchased. Similarly, the same argument applies to dairy cows, or to any stock for that matter. The cost of providing feed for the maintenance of dairy stock in winter-time directly reflects on the production of butterfat in the following season.

When it comes to the provision of feed for winter pigs, objection is raised on the count of cost, labour, and other incidentals. It must be realised, surely, that a winter feed supply for pigs is an assurance that the best use will be made of dairy by-products in the following summer, in the same way as the feed supply for other stock in winter is an assurance that the pastures will be used to the best advantage.

Wastage

During the past ten years, graphs have been compiled by the Department of Agriculture, showing that the average wastage of dairy by-products, mainly through an insufficient winter feed supply, amounts to 120 million gallons yearly. This figure varies from 230 million gallons in 1931, when 450,000 pigs were produced, to 100 million gallons in 1941, when production exceeded one million pigs.

In order to arrive at these conclusions, the total milk production is ascertained, and allowances are made for milk used for domestic consumption, the manufacturer of dried milk, and the milk needed for calves. The balance, as represented by skim-milk and whey, is presumed to be available for pig production. To calculate the wastage problem, the number of pigs slaughtered at freezing-works, bacon-curing establishments, and abattoirs for

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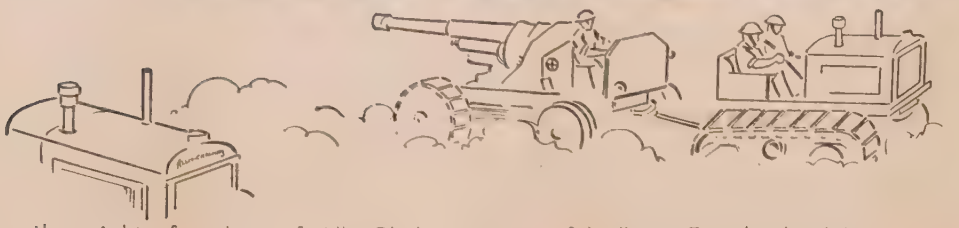

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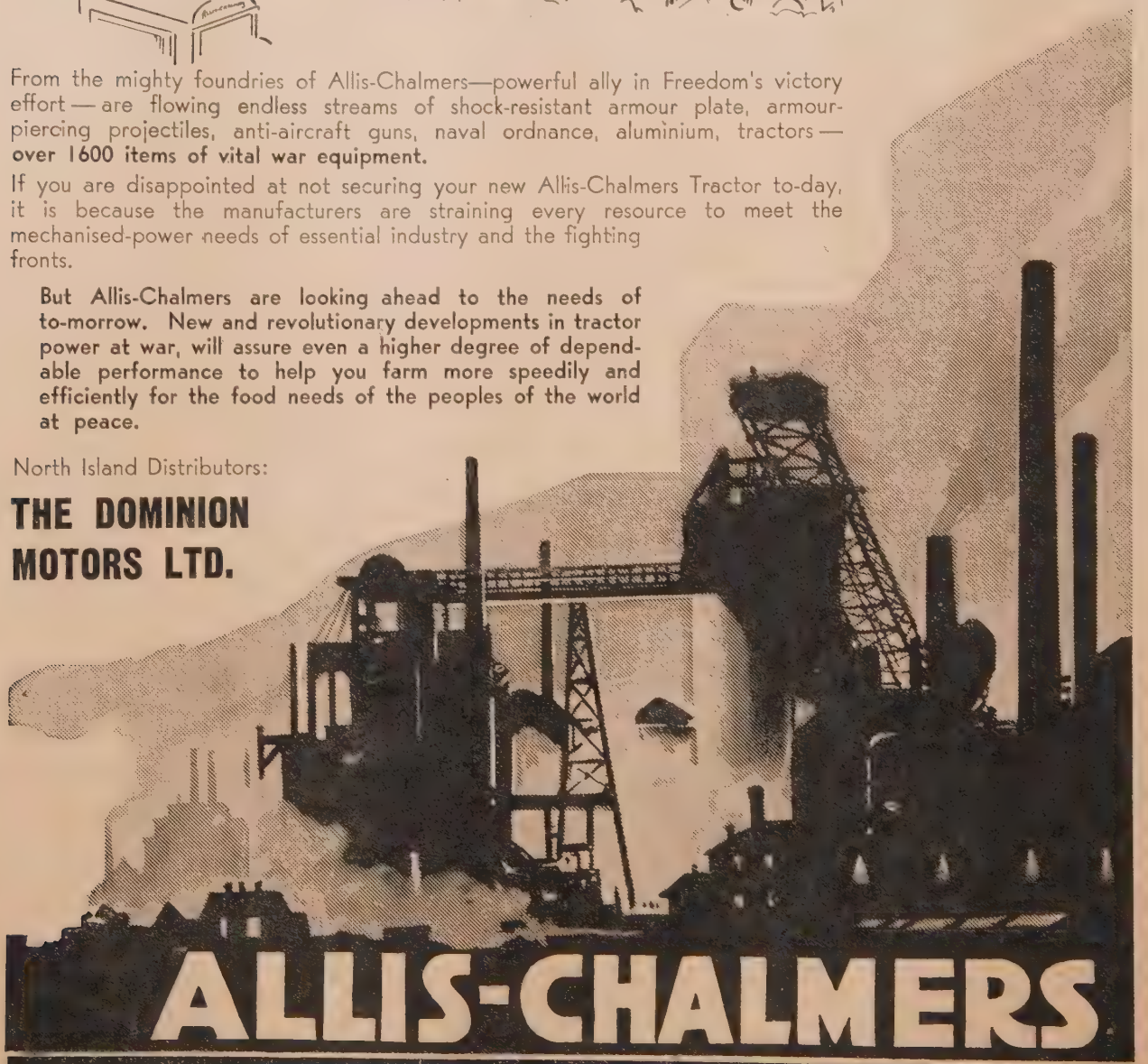

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twelve months are worked back to date of birth.

Computations are made on the basis that it takes five months to produce a porker and eight months for a baconer. Varying feed allowances are then made in accordance with the age of the pigs when slaughtered, and due allowance is also given for deaths during the period of production.

These calculations show not only the amount of wastage that takes place during the peak months of dairy production, but also the amount of feed that had to be provided by way of crops or grain to carry the pigs through the winter months.

Economic production, and this can only be accomplished by the full utilisation of the dairy by-products is dependent upon an adequate winter feed supply, the greater portion of which must be farm-grown crops.

Requirements

Supplementary feed, in addition to diminishing quantities of dairy by-products, will be required between the period March to October, reaching a peak in June, July, August, and September. In the earlier months, the position can be relieved in a normal season by giving pigs the run of a good pasture, in addition to reduced quantities of skim-milk or whey, supplemented with small amounts of grain and meat-meal. This generally serves to meet the need at that time.

In the period of 120 days between June and October, practically all the feed is of a supplementary nature, mainly roots and grass, with a limited ration of grain and meat-meal. At the present time, with our annual production of pigs at 750,000, it is estimated that there will be carried through the winter 80,000 sows, 22,000 boars, and 300,000 suckers, weaners, slips, and store pigs. The feed requirements, on the basis of 6 lb. a day for sows and boars and 4 lb. daily for all others for a period of 120 days, amount to 216 million lb., equivalent to 110,000 tons.

Variety of Crops

If it is assumed that all feed required is grown, providing a variety of crops such as carrots, mangolds, sugar-beet, pumpkins, swedes, artichokes, silver beet, barley, peas, and maize, and that an acre will produce 3 tons of feed, equal to concentrates, then 37,000 acres of mixed crops would be required to provide the needs of winter pigs.

It is generally recognised that one acre of good crops will feed 40 medium stores for a month, when small amounts of protein concentrates are provided in addition. On this basis, one acre would carry ten pigs of all kinds, from weaners to sows, for a period of 120 days. The provision of 37,000 acres for winter pig feed may look ridiculous in print, but when this is viewed in relation to the number of farms producing pigs, the ridiculous aspect disappears.

Farmers are entitled to the assistance and advice of the District Pig Council Supervisors. Pig producers have provided the funds to enable these Councils to be set up, and all farmers are urged to take every advantage of these facilities. Applications for assistance should be made to the Department of Agriculture or to District Supervisors as follows:—Whangarei (Box 131); Pukekohe (Box 32); Whakatane (Box 12); Gisborne (Box 316); New Plymouth (Box 131); Palmerston North (Box 80); Dunedin (Box 693); Christchurch (Box 639); Hamilton, Wesley Chambers.

Statistics show that there are 41,000 farms feeding pigs; of these only 25,000 are breeding. The balance purchase weaners and stores. Most farms carry some stores or breeding stock through the winter, and must of necessity provide a feed supply. The 37,000 acres divided by 41,000 farms show that on the average under one acre of crops would be sufficient to meet all requirements.

Basic Fact

Prior to the war there was evidence of an increase in the number of pigs slaughtered. The foundation of that increase has been more pigs wintered, or more fundamentally still, the growing of crops for winter feed. There are lots of theories associated with the development of pigs, but the growing of crops is the only solid fact that makes the production of more pigs economically possible.

The gradual narrowing of price differences between spring and winter stores that took place after 1932 is the strongest evidence that more pigs were being wintered. The high price of spring and summer stores during the last two seasons is evidence of fewer wintered pigs, and is in keeping with the serious shrinkage of pig production.

During the expansion period, many theories were tried out and cast aside. Much experience has been gained by everyone, but now, looking back over the past, one of the few certainties is that the growing of winter feed for pigs, and thus making ourselves independent of imported pig feeds, is the only real cornerstone of expansion.

THE basis of success in pig production is management. The object of the Department's **free bulletin,** "Modern Methods of Pig Production," is to provide some of the essential information necessary to successful management. If you have not a copy of this bulletin send for one today.

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—By—

C. R. PATERSON,
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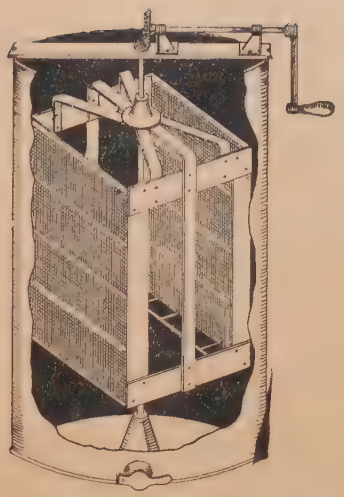


2-frame non-reversible extractor.

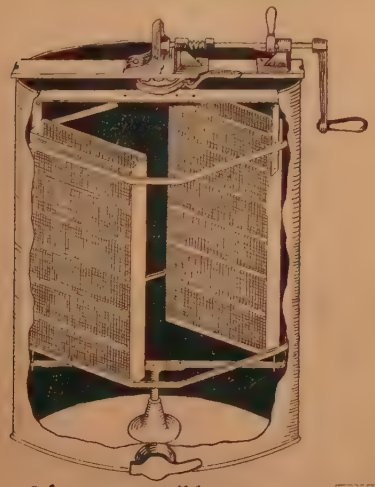
In the early days of beekeeping, the only method of securing liquid honey was to crush the combs and then press and strain the honey through cloth. This destroyed the combs and reduced the quality of the honey. The modern extractor removes the honey from the combs by means of centrifugal force, and not only saves the combs for use again, but also enables the beekeeper to secure and pack honey in the best possible condition for retail trade.

THE invention of the honey extractor, and the great benefit the discovery conferred upon the beekeeping industry, followed closely on the invention of the movable comb hive by the Rev. L. L. Longstroth, in 1851, and of comb foundation by J. Mehring, in 1857.

In 1865, Major D. Hruschka, of the Austrian Army, observed his son carelessly swinging a piece of honey comb in a basket, and noted that the motion caused some of the honey to come away from the comb. Taught by what seemed a mere accident, he proceeded to apply the principle of centrifugal force in designing the first honey extractor.

Value of Extractor

The honey extractor is essential for the economical production of extracted honey. With its use large quantities of honey can be produced, thus making possible the establishment of commercial beekeeping on a large scale. Honey extractors are manufactured in various sizes and designs, so that it is necessary for the beekeeper, or intending beekeeper to have an intimate knowledge of the capabilities of each machine, and to know which is likely to meet his particular requirements. The following description of the various extractors now in general use in New Zealand should help beekeepers to decide the type of machine that will give them efficient service for the number of colonies they are running.



2-frame reversible extractor.

The small, non-reversible extractor was designed to meet the requirements of domestic beekeepers who own from one to five colonies. It will give very satisfactory service, even though it lacks many of the improvements of the larger machines. It is termed a non-reversible extractor, because the construction of the revolving drum or reel is such that after the honey has been thrown out from one side of the combs by centrifugal force, the machine has to be stopped, and the combs have to be turned round, in order that the honey may be extracted from the other side. It is readily seen that a machine of this type would be far too slow for a beekeeper with a larger number of colonies. The usual design of this non-reversible type of extractor is shown in the illustration.

The outer container is made of sheet metal with a honey gate on the lower edge. Inside this container, rotates the reel that holds the combs while the honey is being extracted. The lower portion of the centre spindle rotates, and rests in a raised bearing set in the bottom of the container. Having this bearing raised up allows for a certain amount of honey being held in the extractor without it coming into contact with the oiled bearing. At the upper end of the spindle is the driving mechanism which, in its simplest form, consists of a handle and two cogs to give the speed necessary for the extraction of the honey. Reverse pressure has to be applied to the handle when the machine has to be stopped. A definite improvement to this type of machine is the incorporation of a clutch and brake in the driving mechanism. This allows the drum to be rotated, and when the required speed is attained, the clutch disengages the driving gear, while the brake allows the reel to be stopped for reversal of the combs.

Two-Frame Reversible

The two-frame, reversible extractor is the one doing the bulk of the extracting for those beekeepers with from 5 to 50, and even 100, colonies. It is fast and efficient, and has proved very satisfactory for the smaller commercial honey-producer. This machine is a decided improvement on the non-reversible type in that the combs are held in wire baskets which are free to swing to either side of the reel in which they rotate. The advantage is that, instead of the combs having to be lifted and reversed in the drum, they can now be readily swung or reversed while remaining in the wire baskets. These reversible baskets greatly speed up the work of extracting. They also play an important part in preventing the combs being dislodged from their frames by the strain imposed on them while the machine is being worked. A further addition to this machine is called the automatic reversing gear. With the aid of this device the baskets may be reversed quickly by the application of the brake lever, but many beekeepers who have worked both types maintain that there is very little advantage in the automatic gear, and some machines are worked with the automatic feature cut out. For the most efficient working of a two-frame, reversible machine, it should be securely fastened to the floor or an elevated platform. This is usually done by means of two or three holding down rods with turn buckles. Two combs of approximately equal weight should be placed in the baskets each time, otherwise considerable vib-

Extractor holding rod

ration is set up, with a definite risk of damaging the combs. Practice will soon tell the speed required for extraction of the honey in the quickest time without damaging the combs. In warm weather, it is possible to damage new combs if the machine is turned at too great a speed. When maximum speed has been acquired with the handle, the clutch lever should be turned down to allow the reel to run freely for a few seconds before the brake-lever is gently applied. With a little experience, it will be found possible to flick quickly over each basket while the drum is still rotating at a reduced speed. When the baskets have been reversed, the clutch is again engaged and the baskets speeded up by means of the handle, after which all honey should have been extracted from both sides of the combs. Some beekeepers contend that it is necessary to place the combs in the baskets with relation to the direction of rotation, but practice has shown that (with free flowing honey) combs can be placed in the baskets without consideration of whether the top bar is facing away from the direction of rotation or not.

For Big Apiaries

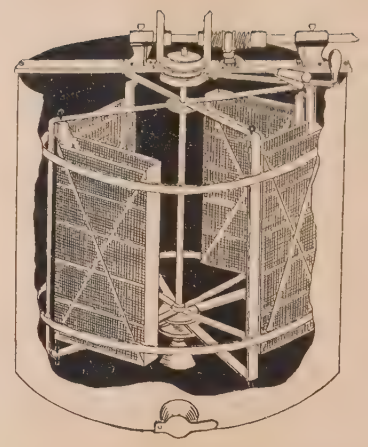
The 4-frame, reversible machine (power or hand) fulfils the requirements of the beekeeper operating from 50 to several hundred colonies. It is constructed on the same principle as the two-frame reversible, but in view of the rotating reel having to carry four frames, the machine is more heavily constructed. In this type of extractor the automatic reversing-gear is a decided advantage, and is generally used. The baskets in the Pender machine are reversed by means of four arms fixed on the reel spindle, with the outer ends of each arm reposing in slots in the bottom of the four baskets, while the reel is free to rotate on the vertical spindle. As the brake is applied, the spindle with its four fixed arms is brought to a stop, but the reel carries on, thus swinging the baskets over to the other side. In the latest design of these machines bevelled friction-gear takes the place of the cogs on the two-frame machines. This friction gear allows of smooth running under power drive. For the operation of these machines by hand, a gear is placed on an auxiliary shaft so as to increase the speed of the driving shaft, or otherwise bring it up to the speed it would be driven at when operated by motor power.

Similar in construction to the four-frame, reversible extractor is the eight-frame. This extractor is entirely power-driven, and is capable of handling the output of large commercial apiaries.

Beekeepers wishing to purchase a basket-type extractor should give special attention to the size of the baskets. Machines from two frames up to eight frames are manufactured with baskets of two sizes. The 9⅝-inch baskets are constructed to take the full-depth Hoffman or Simplicity frames, while machines with 12 in. baskets will take two half-depth frames at one time. Where no half-depth frames are used the 9⅝-inch basket is all that is required, whereas those using both full-depth and half-depth frames will find the larger baskets a decided advantage.

Radial Extractor

This type of machine will extract honey from both sides of the combs without reversing. The construction of this extractor is simplicity itself, but it has been found that for this type of machine to be thoroughly efficient, the revolving wheel should hold not less than 20 combs, and that is the smallest type of this machine on the market.



4-frame automatic reversible extractor.

The larger sizes will hold up to 5 combs at a time. The illustration clearly shows the construction of a radial extractor. A 1 h.p. electric motor is able to drive the largest of these machines with ease. The first models of this type were equipped with an adjusting screw which controlled the pressure on the driving friction plate. For successful operation of this radial, it was essential to run the machine slowly until more than half of the honey was thrown out of the combs. Then it was safe to increase the speed to get the remaining

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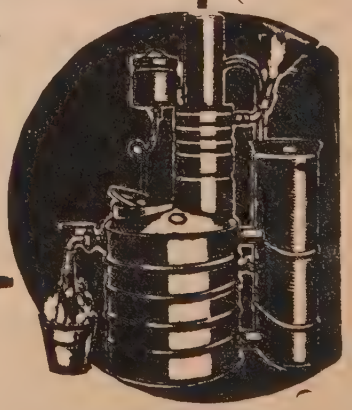

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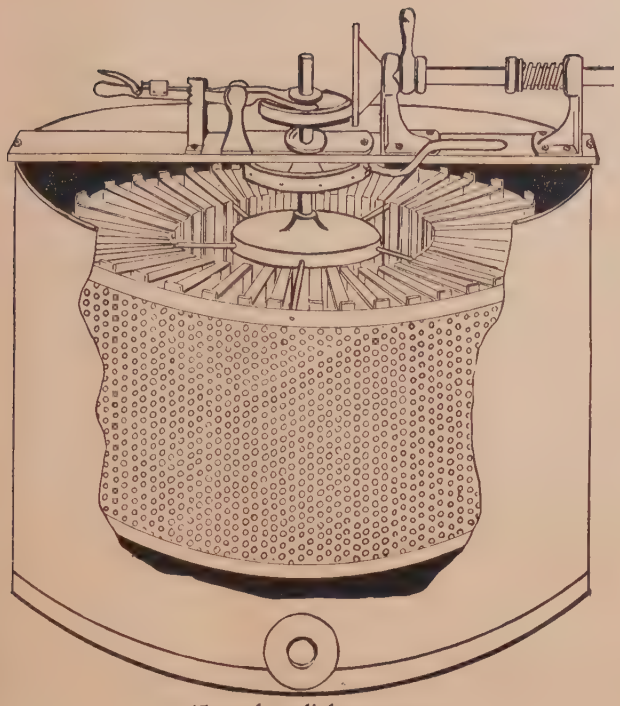
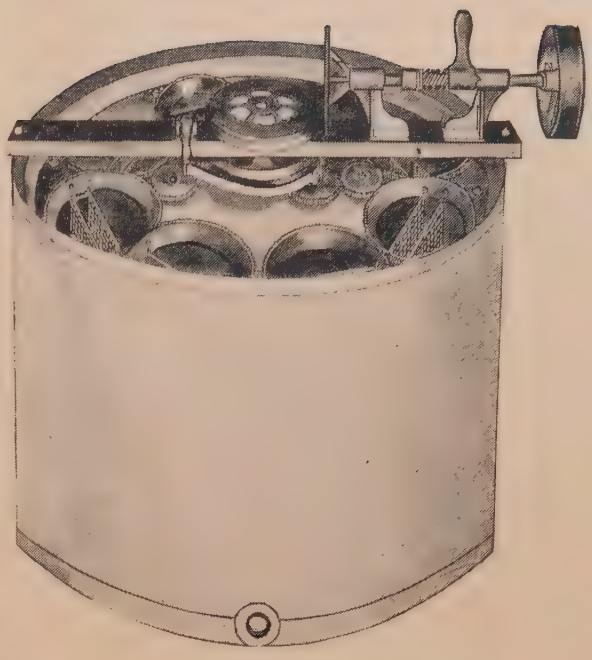


45-comb radial extractor.



8-frame Buckeye extractor.

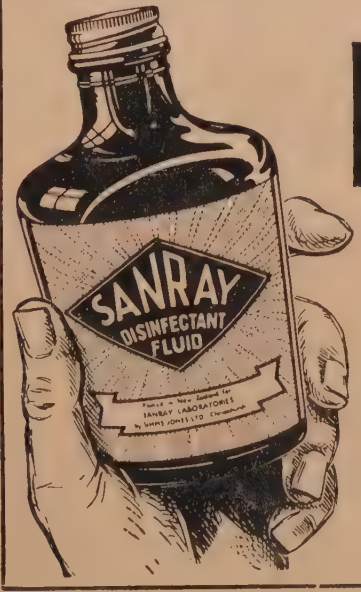
honey. If too high a speed was attained before most of the honey was out of the combs, many of the weaker combs collapsed under the severe strain. It was, therefore, necessary for the operator to stand almost over the machine in order to control the speed by means of the adjusting screw. This depreciated the value of the machine, as many beekeepers, when they first installed a radial extractor, thought that, once the machine was loaded and running, they would be able to continue uncapping the next batch of combs. To overcome this decided drawback some beekeepers converted the machine, so that it had three definite speeds. This was done by machining a key way on the centre spindle of the reel, and allowing the driven plate to slide freely on the shaft. A lever controlled the position of the plate in relation to the driving plate. The illustration clearly shows the principle on which this control works. With this adjustment the radial extractor is very efficient.

Once the machine is started, a low speed is maintained until the adjusting lever changes the relationship of the plates. There is no need for the operator to stand over the machine. Instead he can carry on with uncapping or other work, and alter the speed of the machine as required. New models of radial extractors have definite speed control.

Radial machines are quite satisfactory for dealing with a free-flowing honey, such as that secured from white clover, and in cases where the beekeeper adopts the practice of extracting the honey the same day as the combs are brought in from the hives. In districts where heavy honey is secured from mixed sources, and the bees are in close proximity to ti-tree areas, then, however, the installation of a machine of this type should not be considered.

Eight-Frame Buckeye

This type of 8-frame, basket machine is designed to overcome two unsatisfactory features associated with other types of basket machine. In the Buckeye, the combs can be reversed while the machine is running at full speed; in the other machines it is necessary almost to stop the revolving reel before the baskets are reversed. The reversing does not put such a strain on the baskets and combs, as each basket revolves on a central pivot, but in other types the baskets are pivoted at one end, and have to swing through an arc of 90 degrees, thus putting a severe strain on the machine. Quite a number of Buckeye machines are in use in the Dominion, and are proving very efficient in extracting honey that could not be handled with the Radial type



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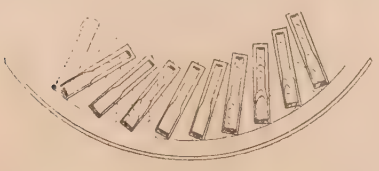
of extractor. The illustration gives a clear idea of the construction and principle of this extractor.

The Semi Radial, or Hungerford, Extractor, which has quite recently been placed on the market in Australia, employs both the principle of the older



Principle of semi-radial extractor.

type of basket machine and the newer type of radial extractor. Although it embodies the features of the reversing basket machine, the baskets do not reverse completely from one side to the other. So far this machine has not been tried out extensively under New Zealand conditions.

Care of Extractors

Many beekeepers have been bothered with a very fine spray of honey being thrown out the top of the extractor as it is being worked, making the operator sticky and leaving a rather unsightly mark on the walls of the honey house. This can be overcome by making two metal or wooden covers as shown in the illustration, and placing them over the extractor while it is running. These may be used as a permanent cover when the machine is not in use. It will be found when operating the extractor that it is necessary to have only the back cover in place to overcome the nuisance of the fine spray.

As mentioned earlier honey should not be allowed to accumulate so high in the extractor that it covers over the bottom reel bearing. When this happens, the oil is carried away from the bearing, and there is also the risk of spoiling the flavour of the honey.

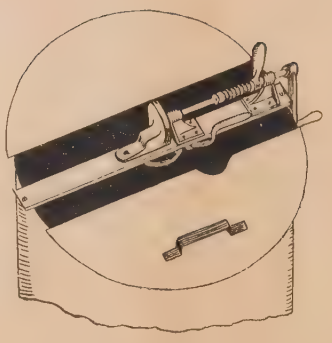
Combs of honey should be carefully placed in the wire baskets, otherwise the baskets will soon become distorted and loose at the joints. All moving parts should be oiled sparingly, as excessive oiling is likely to contaminate the honey. A good plan is to paint the super-structure with a glossy-finish, metallic paint. This not only adds to the appearance of the machine, but also allows the operator to see at a glance when too much oil has been given to the bearings. A piece of rag will soon clean any surplus oil that may show on the painted surface.

Dismantling

When the last extracting of the season has been completed, the extractor should be dismantled and thoroughly cleaned. A hose with a pressure-supply is useful in getting rid of all the honey and wax particles. All the parts should then be washed in boiling water and thoroughly dried. A rag dipped in clean oil can be rubbed over all parts that are likely to rust or tarnish. In the past, some writers advocated leaving the extractor just as it finished extracting. They contended that all parts would be smeared over with honey which would be a protection against rust during the winter months or off season. Consideration was not given to the fact that, where honey is left in contact with certain metals, a chemical action sets in which is detrimental to the metal concerned. Apart from this, the mere fact of leaving any honey equipment in this condition is definitely unhygienic.

Spare parts for most of the honey extractors in use in New Zealand can normally be obtained from dealers in beekeepers' supplies. Always quote make, type and number of machine when ordering replacements.

Honey extractors are manufactured in different sizes, and of varying types, to suit beekeeping conditions all over the world. Choose the kind of machine that experience has proved to be particularly suited to the district in which you are operating, while the size will be governed by the number of colonies kept. With care and reasonable handling an extractor will give many years of useful service.



Cover for small extractor.

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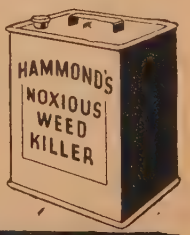

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Above—Left: A potato showing, towards the left, a slight bruise, and in the centre a cut. *Right:* The same tuber in cross section showing the extent to which rotting has already spread. Under favourable conditions such a tuber would become completely rotten in a very short space of time. *(Photos by Plant Diseases Division, Auckland).*

Careful Handling Necessary to Avoid Waste

The Potato Advisory Committee appointed by the Hon. Minister of Agriculture to advise the Government on all aspects relating to the potato crop, at its November meeting gave consideration to complaints which had arisen in regard to the quality of potatoes shipped to the North Island. The committee is very perturbed at the position as it was reported to the meeting and has recommended to the Government that every endeavour be made to effect improvements.

THE complaints emanated from those North Island stores in which potatoes were being re-sorted prior to crating and shipment overseas for use by armed forces in the South Pacific. Upon investigation, however, it was discovered that the general quality of **all** potatoes being marketed under the description "f.a.q." left much to be desired and in many cases was far below the standard generally recognised by that term.

Officers of the United States Joint Purchasing Board attended the meeting of the committee and presented figures which convinced members that although some lines of potatoes measured up to the prescribed grade, others were so far below grade that even when 50 per cent. had been picked out, the remaining tubers were still not of a satisfactory standard.

Examination Reveals

Typical results of the examination of individual sacks of potatoes selected at random in Auckland stores prior to crating are given below (figures are given as percentages).

These analyses reveal firstly that while the grading of some lines was quite satisfactory the tolerance of 4 per cent. of damaged tubers allowable last season in potatoes of f.a.q. grade was in many cases grossly exceeded, and secondly that the prime factor affecting the quality is the high percentage of bruised tubers present. These tubers, particularly so those which are badly bruised, are very liable to develop dry and wet rots in storage, resulting in considerable loss in the line. This is especially the case when held even for a short period under conditions of warmer temperature such as develop in the hold of a ship. The elimination of bruised tubers, preferably by removing the causes of bruising will go far to bringing the general quality of table potatoes to a high standard.

That the amount of damage in evidence is not caused in transit is shown by figures of examinations made on trucks at Lyttelton. Single sacks from sixteen different lines were examined and only two contained more than 90 per cent. of sound tubers while four contained less than 60 per cent. of sound tubers.

Description of tubers—	Line A. (Reds)	Line B. (Whites)	Line C. (Suttons)	Line D. (Reds)	Line E. (Whites)	Line F. (Suttons)
Undersize	—	—	0.5	—	0.9	—
Cracked	—	1.1	3.7	—	6.0	—
Cut	—	0.3	3.7	2.2	2.6	3.0
Slightly bruised	27.0	0.6	12.2	0.6	19.0	36.7
Badly bruised including dry rot)	28.0	2.8	11.6			
Blighted and soft rot	0.5	0.1	0.6	0.6	5.2	1.8
Insect damaged	—	—	—	0.6	0.9	—
Greened	—	—	—	—	0.9	2.4
Sound tubers	44.5	95.4	67.7	96.0	64.5	56.1

Loss to All

The marketing of potatoes of inferior quality reacts detrimentally on all parties:—

The consumer suffers through loss of material upon which transport and handling charges have been paid.

The merchants or trader suffers through handling an inferior article, through loss in picking over, and because of the greater effort required to dispose of material of inferior quality.

Finally, the grower suffers through the fact that stability and confidence in the potato market are undermined.

It may be argued that the grower will receive more for five tons of potatoes which on arrival at their destination lose 20 per cent. through wastage than he will receive if the picking over is done on his own farm and he markets only four tons of potatoes which will be disposed of without loss.

It must be realised, however, that the five tons of poor potatoes on arrival have only the same value as the four tons of good potatoes and that transport, handling and commission charges amounting to perhaps £4/10/- have been paid on the one ton of material which is later discarded. It is therefore apparent that the grower can be paid for these five tons of poor potatoes only the same amount as can be paid for the four tons of good potatoes **less** an amount of £4/10/-. Thus by the following calculation if the good potatoes are worth £8 per ton to the grower the poor potatoes are worth only £5/10/-.

	£	s.	d.
Four tons good potatoes at £8 per ton	32	0	0
Less £4/10/- charges on one ton discarded	4	10	0
Value of 5 tons of poor potatoes .. Equals £5/10/- per ton.	27	10	0

The sale of an extra ton in every four tons does not recompense the grower for the lower value per ton, apart altogether from the detrimental effect generally on the market.

Cause of Bruising

The figures set out above indicate that if the bruising of tubers can be eliminated the main cause for complaint would automatically disappear. Bruising occurs as a rule during the harvesting of the crop and may result from one of several faults, for example:—

(a) Digging the crop before properly mature;

(b) Incorrect adjustment of the digger in relation to the condition of the soil in which the digger is working. In a dry soil tubers are more prone to bruising, and the slowing down of the speed of the digger or the removal of one of the aprons may be required;

(c) Careless picking up of the tubers or rough handling during cartage and pitting.

Recommendations

The recommendations which the committee has made to the Government in order to rectify the position are briefly:—

1. To see that no potatoes are shipped to the North Island unless accompanied by an f.a.q. certificate.
2. To see that all potatoes covering which an f.a.q. certificate is issued are really of f.a.q. grade.
3. That growers be urged to adopt some method for the identification of their produce which will enable the sacks to be sorted into individual lines on arrival at their destination.

It is believed that all these points will be of assistance in improving the quality of table potatoes. They do not approach the source of the trouble, however, in that they do not eliminate the factor which actually causes the damage.

The grower alone can take the action necessary to rectify these faults and the committee is confident that all potato growers will appreciate the serious nature of the position and take whatever steps might be necessary to bring about improvement.

Orchard Diseases

THE results of investigations carried out by the Plant Diseases Division are embodied in the Department's **free** bulletin No. 161. This bulletin deals with the various sprays in common use, their dilution and combination, and sets out spray schedules for apples, pears, stone-fruits and citrus fruits. The treatment and disinfection of tree wounds is also explained. A copy of this informative **free** bulletin may be obtained from the Department of Agriculture at Auckland, Wellington, Christchurch and Dunedin.

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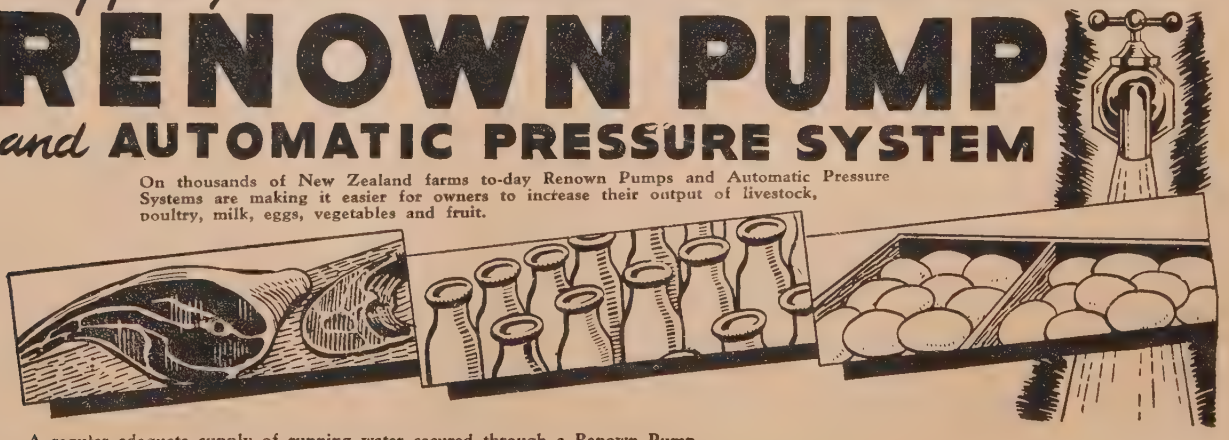

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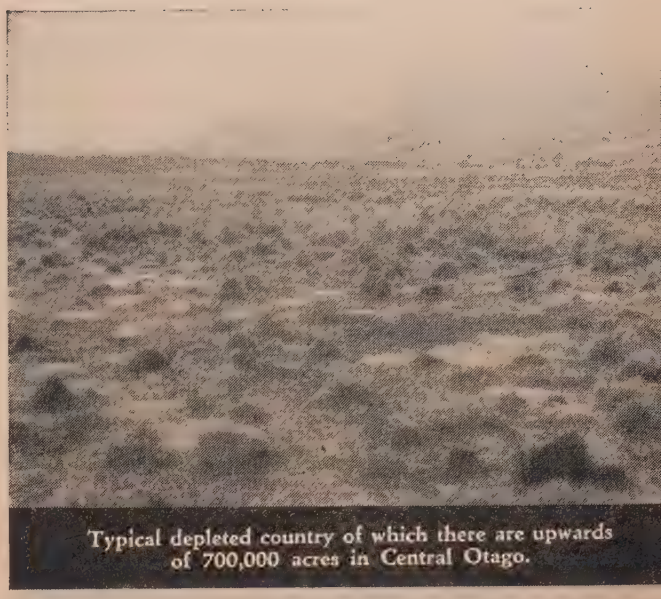
Regrassing Depleted Areas in Central Otago

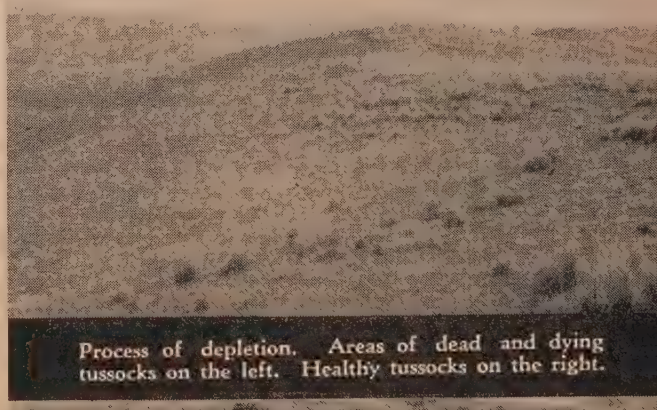
Interim Report on Trials at Pisa Flat

— By —

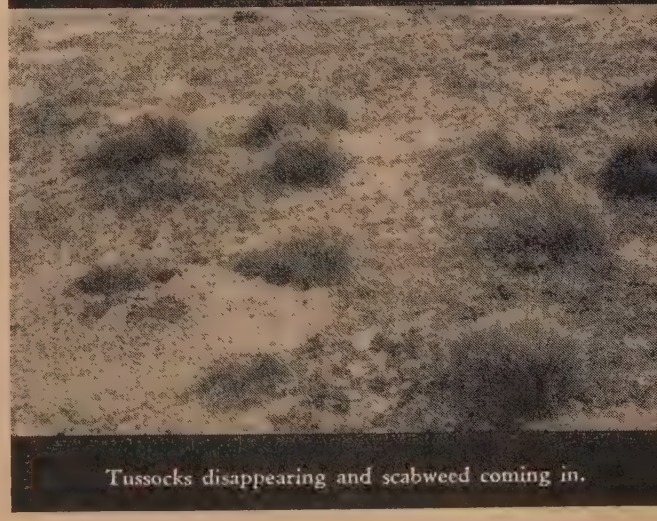
G. G. CALDER,
Instructor in Agriculture,
Alexandra.



Typical depleted country of which there are upwards of 700,000 acres in Central Otago.



Process of depletion. Areas of dead and dying tussocks on the left. Healthy tussocks on the right.



Tussocks disappearing and scabweed coming in.

The large area of grazing tussock land of New Zealand constitutes one of our greatest natural assets. During comparatively recent years this asset has been diminishing, in that the carrying capacity of certain tussock lands, more especially in Central Otago where the rainfall is approximately 25 inches and under per annum, has been dropping. In some cases the natural pasture has practically disappeared, and the country is almost bare, thus opening the way for erosion with its subsequent ill effects.

MANY explanations are advanced for the deterioration of the tussock country, and while they probably all have some bearing on the point, there is little doubt that overgrazing by sheep and rabbits is the main cause, in conjunction with the characteristics of the native grasses themselves. Goodwills paid in the past for run country have often left the occupier with no choice but to overstock in an attempt to pay his way and meet current charges.

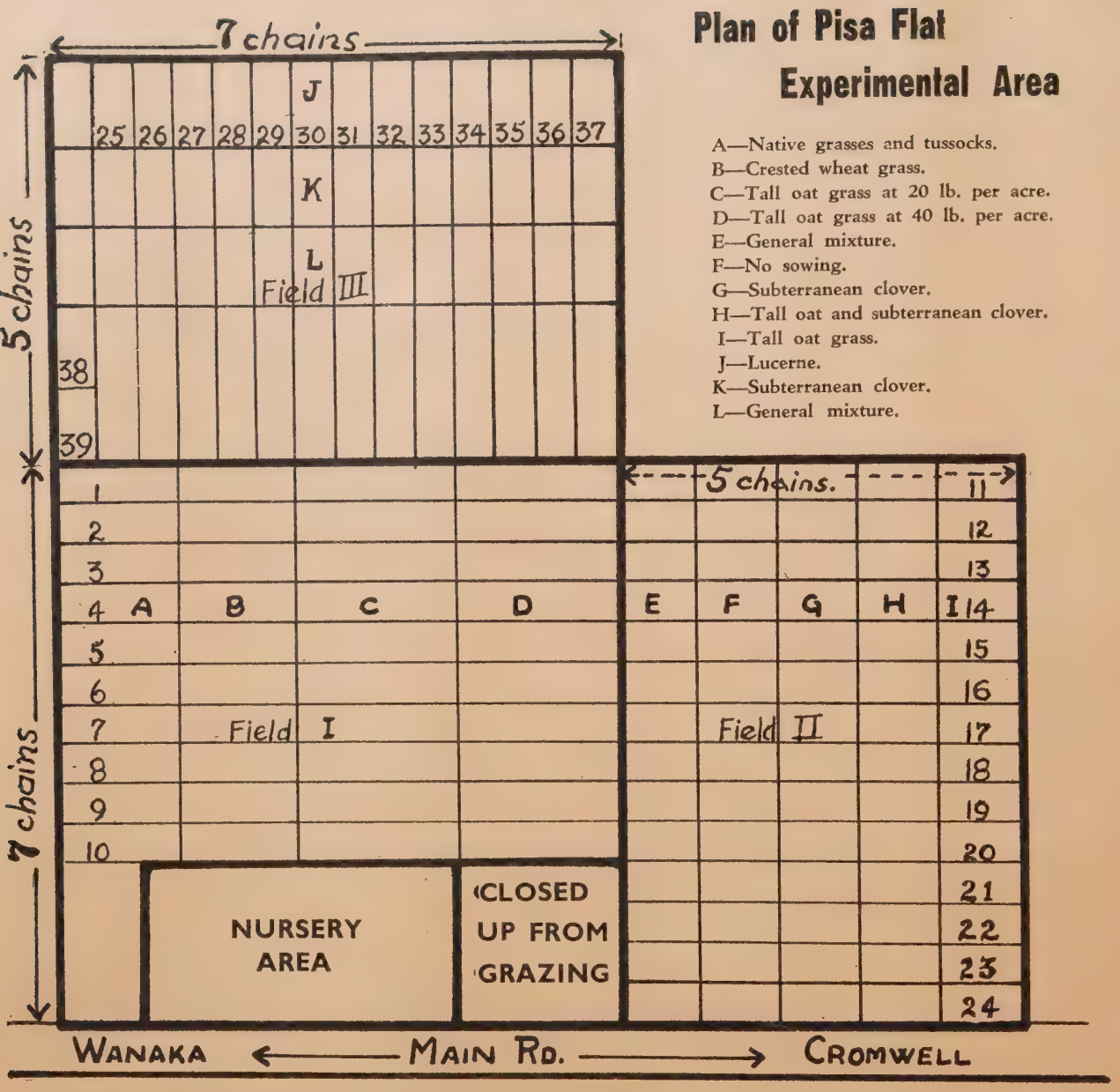
Overgrazing or overstocking becomes more acute during periods of low prices. Surplus sheep worth only a few shillings are, naturally enough, held for another season in the hope that prices will improve. It frequently happens that low wool-values coincide with low rabbit-skin values. This means that rabbits are not so well cleaned up, consequently more sheep and more rabbits are carried, and rapid deterioration sets in. This was the position during the slump years, when large areas of tussock died out.

Native Grasses

The nature of the native grasses themselves is an important aspect of deterioration, in that the grasses were evolved in the absence of the grazing animal, and, therefore, can hardly be expected to stand up to steady grazing conditions.

Rabbits have certainly accentuated the depletion of the country in question, but there is evidence to show that under normal control rabbits alone are no more harmful than sheep, nor as harmful as a combination of rabbits and sheep. Where rabbits have not been present in other parts of New Zealand (where surface sowing and topdressing have not been carried out, and where the rainfall is much higher than in Central Otago) the carrying capacity of the tussock country has been slowly dropping, due to the fact that most of the native grasses cannot survive under our present grazing conditions.

Plan of Pisa Flat Experimental Area



A—Native grasses and tussocks.
B—Crested wheat grass.
C—Tall oat grass at 20 lb. per acre.
D—Tall oat grass at 40 lb. per acre.
E—General mixture.
F—No sowing.
G—Subterranean clover.
H—Tall oat and subterranean clover.
I—Tall oat grass.
J—Lucerne.
K—Subterranean clover.
L—General mixture.

FIELD I.

1 Cocksfoot, *poa pratensis*, white clover, yarrow and sheep's burnet.
2 Cocksfoot, *poa pratensis* and white clover.
3 Cocksfoot and mother seed white clover.
4 Mother seed white clover.
5 Montgomery red clover, broad red clover and white clover.
6 No sowing.
7 *Lotus hispidus.*
8 Lucerne.
9 Mount Barker subterranean clover.
10 No sowing.

FIELD II.

11 Native species.
12 *Poa pratensis.*
13 Tall fescue.
14 *Phalaris tuberosa.*
15 Crested dogstail.
16 Cocksfoot.
17 Lucerne.
18 Crested wheat grass.
19 Chewings fescue.
20 Certified ryegrass and white clover.
21 *Danthonia pilosa.*
22 Browntop (dryland type).
23 Browntop (ordinary type).
24 No sowing.

FIELD III.

25 Browntop.
26 *Danthonia pilosa.*
27 Certified ryegrass and white clover.
28 Chewings fescue.
29 Crested wheat grass.
30 Meadow fescue.
31 No sowing.
32 Cocksfoot.
33 Crested dogstail.
34 *Phalaris tuberosa.*
35 Tall fescue.
36 *Poa pratensis.*
37 Native species.
38 Crested wheat.
39 Tall oat.

Low rainfall, low winter temperatures, hot dry summers, and the presence of grass grub (*Odontria*), all tend to weigh down the scales against the survival of the native pasture when it has been weakened by overstocking.

Low Rainfall

These are probably the reasons for areas of tussock dying out when some particularly dry, hot seasons were experienced. The year 1932 produced a record low figure of 9.52 inches rainfall for the year at Alexandra. From 1917, when rainfall figures were first recorded in Alexandra, there has been a steady decline in rainfall, as shown in the following five-yearly periods, except for the last period, when the average rainfall increased. This rise may be the beginning of a cycle of increasing rainfall and if so it will be of value to the tussock country.

Years.	Average Annual Rainfall.
1917-1921	15.26 inches
1922-1926	14.78 „
1927-1931	12.12 „
1932-1936	12.10 „
1937-1941	12.96 „

Summer burning is the most drastic cause of rapid deterioration, and as long as human nature is what it is this cause will always be present, and must be guarded against. The only effective guard against summer burning is the judicious use of fire in the spring when the ground and tussock butts are moist. Tussock country destroyed by fire in the summer is evidence that the area should have been burnt the previous spring when severe damage would not have occurred, and the land would then have been safe from fire for a number of years.

It is conceded that a spring burn must scorch or destroy some seedlings or plants, but in the years of immunity from fire that follow, this loss is more than replaced. In short, whenever tussock land is capable of carrying fire the area should be burnt in the early spring to save it from destruction by an accidental summer burn.

Regrassing Trials

With the depletion of large areas of tussock land arises the question of regrassing them. Nature in her own time would make a job of it, and she has already taken the first step in the establishment of scabweed, which not only provides an efficient and tough cover to the land, but also provides a deposit of ½ inch to 1 inch of humus in which seedling grasses can be found. However, from man's point of view, scabweed does not provide a cash return, in that no grazing is obtained from it, consequently trials and experimental areas have been under way for regrassing these areas to provide maintenance for sheep.

Two methods have been considered for regrassing these depleted areas:

1. The closing up of areas from grazing animals to allow natural regeneration of the indigenous grasses; and

2. Sowing of exotic grasses that have proved themselves suitable under the local conditions.

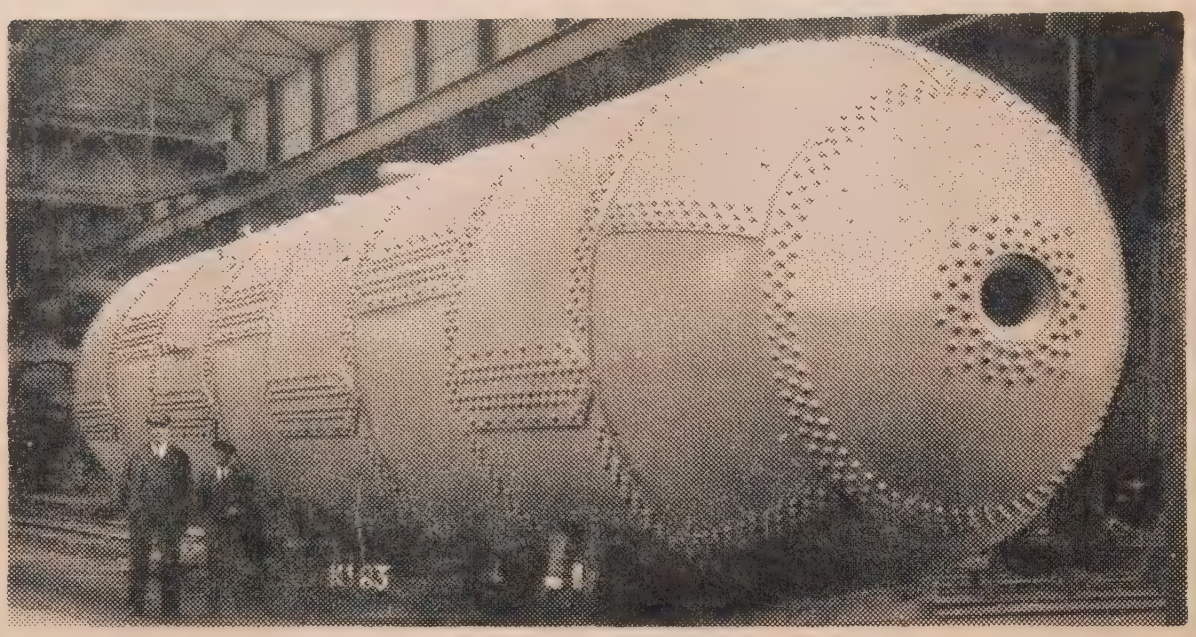
As regards the first method, many experimental areas have been netted off from sheep and rabbits by runholders and others interested.

Probably some of the best examples are those on the Dunstan Range, near Cromwell, where the late Dr. Cockayne, in conjunction with Mr. Middleton, fenced off, in 1920, 13 acres on Northburn Station. These areas ranged up the mountain side from approximately 1,000 ft. to 3,000 ft. in altitude.

Slow Rejuvenation

Evidence from these and other areas shows that rejuvenation of the native grasses and tussocks is slow and uncertain except where the rainfall is reasonably high, or where frequent mists and fogs increase the moisture content of the soil, such as is found from, say, 2,500 ft. altitude upwards.

Below this level, where the majority of the denuded land exists, the chances of obtaining a reasonable soil



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covering of native grasses would be very slow, and, even if it were obtained, it would, under grazing, again thin out, and the land would finally revert to its present state. The great majority of the native grasses, especially the silver tussocks (*Festuca novae zelandiae* and *Poa caespitosa*) are unpalatable, and could probably be better replaced by some introduced species of a more palatable nature and higher production capacity.

Experimental Area

The second method was decided upon in the establishment of the Pisa Flat Experimental Area. The land carried only scabweed (*Raoulia*), some Poa maniototo and some hair grass. The carrying capacity of the land in terms of sheep was practically nil, although some rabbits were living there.

An area of 7 chains by 7 chains was fenced in, and the greater portion of it sown out in March, 1938. Prior to sowing, the land was gone over once with a cultivator and once with the tine harrows, which formed a rough-looking but reasonable seed bed. Actually the land could have been ploughed and a good seed bed prepared by more orthodox methods, but the method adopted on the trial area is probably the most feasible one to use when applying the results of the area to regrassing the typically denuded run country in Central Otago where the use of the plough would hardly be practicable.

The pasture seeds were sown broadcast by hand, the land chain harrowed and then rolled. An area in one corner (see plan) 2 chains by 2 chains, was fenced off, and not cultivated or sown, but left, in order that the results of natural regrassing, when completely closed up from grazing, might be observed.

A further continuation of this area, 2 by 4 chains, was fenced off and used as a nursery for trying out small quantities of new varieties or species of pasture plants for observation as to their possible usefulness under the local conditions. Actually 195 strains and species have been sown out on this area. These have been collected from practically every continent, and the percentage of plants that has turned out unsuitable has been very high, while a few have done moderately well.

Paragon Wanted

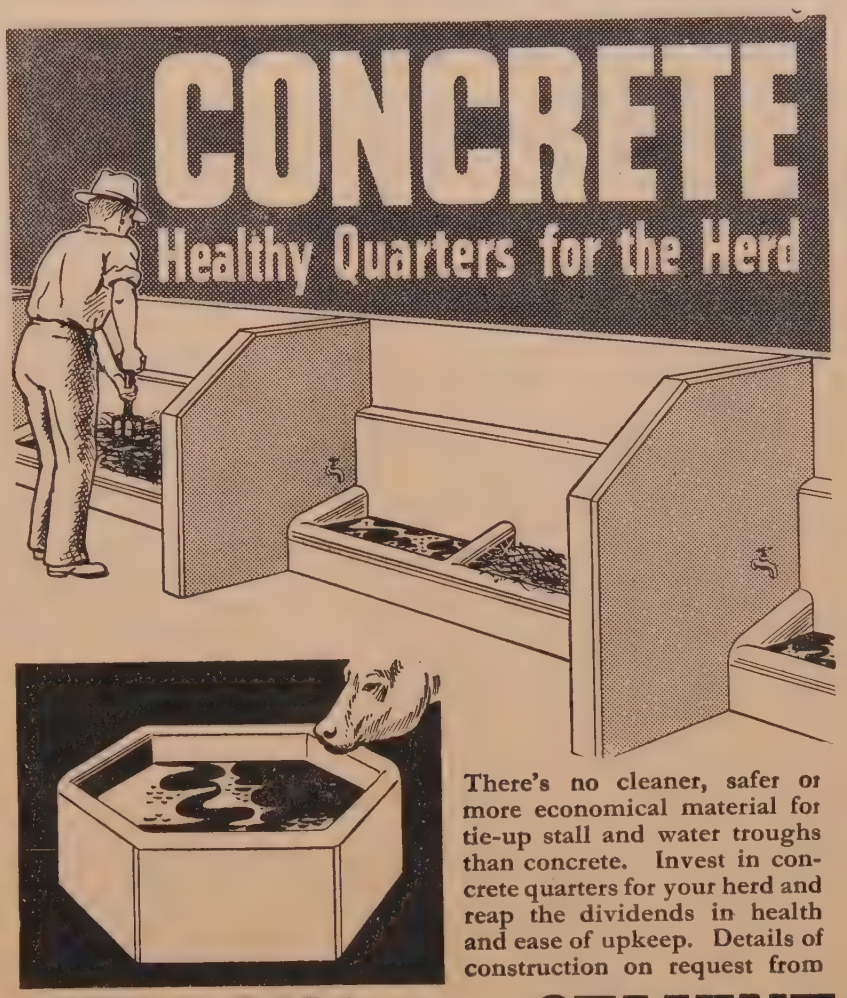
The plant one hopes to find has to be a paragon, in that it is required to stand up to drought conditions in the summer, under approximately 12 in. to 15 in. rainfall, with summer temperatures up to 90 deg. in the shade, and severe winters liable to snowfall, with temperatures dropping to over 25 degrees of frost.

In addition, the plant has to provide a fair amount of palatable foliage, and when grazed down, not only survive the grazing but thrive and carry on producing growth. One must also guard against the introduction of plants, with aggressive or strong twitchy characteristics, which may invade, and take possession of better pastures or arable land.

The first few years of the trial, therefore, aimed at endeavouring to establish various species under the best conditions possible on the area commensurate with practical methods, e.g., rough cultivation, and sowing in the autumn so that the young seedlings could take advantage of autumn and winter moisture.

Grazing was carried out during 1940 and 1941 by large numbers of sheep for short periods to clean up roughage. But the real test, once the species were established, was to simulate the usual management of winter country, i.e., continuous grazing in late autumn, winter and spring. Practically all the sheep runs have good summer-grazing country. This is high country that is well covered with native grasses and tussocks, but which is not safe winter country, as at that time of the year it is usually well covered by snow.

The sheep are brought down from this high summer country in say, April, and wintered on the lower country, which is reasonably safe from snow losses, except perhaps in odd, exceptional winters. This is termed winter country. It is the grazing capacity of this winter country which usually determines the carrying capacity of the whole run, and it is on this winter country that the serious depletion of the native pastures has occurred. Consequently the grazing



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management of the Pisa Experimental Area has been adopted to attempt to reproduce the grazing conditions of winter country.

Four Strips

In March, 1938, Field 1 was divided into 4 strips on which were sown:—

1. Native species composed of silver tussock (*Festuca novae zelandiae* and *Poa caepitosa*), blue tussocks (*Poa colensoi* and *Poa intermedium*), blue wheat grass (*Agropyron scabrum*), *Puccinella sp.* and *Danthonia spp.* The mixture was sown at the rate of 20 lb. per acre.

2. Crested wheat grass (*Agropyron cristatum*) at 30 lb. per acre.

3. Tall oat grass (*Avena elatior*) at 20 lb. per acre.

4. Tall oat grass (*Avena elatior*) at 40 lb. per acre.

Strips ½ chain wide by 7 chains were sown across the four main sowings with the following mixtures:

(a) Mt. Barker subterranean clover; (b) lucerne; (c) *Lotus hispidus;* (d) Montgomery red clover — broad red clover—white clover; (e) white clover; (f) cocksfoot—white clover; (g) cocksfoot—*Poa pratensis*—white clover; (h) cocksfoot—*Poa pratensis*—white clover yarrow—sheep's burnet.

After the area had been closed up for 21 months, the first grazing was carried out.

The majority of species were well established when grazing commenced. Lucerne was the best with a good dense growth of 24in. Tall oat grass had a dense sward with seed stalks 2 ft. 6 in. in height and a growth of 8 in. to 10 in. Broad red clover and Montgomery red clover produced a fair sward with a growth of up to 12 in.

Crested wheat grass had an open sward, with a spindly growth including seed stalk of 6-7 in.

Of the native grasses, blue wheat grass was the only species at all prominent, and had a growth of foliage up to 12 in. Plume grass (*Dichelachne crinita*) was a volunteer.

Cocksfoot produced a fairly dense sward with a growth of 6-8 in.

Sheep's burnet and yarrow were both fairly satisfactory. *Poa pratensis* was slow in establishing itself. White clover and subterranean clover had both been good, although at the time grazing commenced these two species had produced seed and become dormant.

Winter Block

Although this field had been grazed in 1940 and 1941, the first real attempt to graze the area as a typical winter

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block was in 1942, when 20 ewes were given access, on May 1, to fields 1, 2 and 3. The grazing was carried out on the open-gate system, thus allowing the ewes to graze at will over the three fields, the grazing area of which is 10.1 acres.

The 20 ewes and their 19 lambs were taken off the area six months later, on November 1, 1942. Lambing commenced in early September and continued to early October. The ewes wintered well, although probably the full carrying capacity of the fields was reached. No supplementary feed was supplied.

The carrying capacity of the area, excluding lambs, was practically one ewe per acre per year.

Although the grazing area is given as 10.1 acres, reference to the plan will show 10.7 acres. The difference between these two figures is accounted for by four areas, amounting to .6 of an acre, that are fenced off for the protection of trees and shelter belts.

Before grazing, the three fields all had a good standing growth according to the characteristics of the sown species. The red clovers—broad and Montgomery—appear to have been the first species grazed, but no other preferences were noticed. The ewes grazed from one field to another, crossing all varieties and evenly grazing them all. By the end of August the whole area was well grazed down, and during the early growth the ewes were evenly controlling the growth of all species.

Lucerne

Lucerne appears to thrive as a pure association. Where other species crossed the lucerne strip they became smothered out by the summer and autumn growth. However, with a seeding of, say, 5 lb. per acre, one may expect to get a mixed pasture. The only deaths in 50 *Pinus ponderosa* trees were 5 trees planted along the end of the lucerne strip, due to the smothering effect of the lucerne.

By the end of 1942, lucerne, tall oat, cocksfoot and subterranean clover were holding their own with reasonably good swards, *Poa pratensis* and yarrow had improved, while Montgomery red clover and broad red clover had practically gone out. *Lotus hispidus* had also disappeared. Crested wheat grass was poor, while the thin stand of blue wheat grass was holding its own.

In March, 1939, field II, comprising 3½ acres, was sown and netted in. Cultivation was the same as on field I, except that no rolling was carried out after sowing the seed.

Lengthwise the field was sown in five strips as follows:—

1. **A mixture of 39 species.**
2. **No sowing.**
3. **Subterranean clover.**
4. **Tall oat grass and subterranean clover.**
5. **Tall oat grass.**

Across the field 14 strips of ½ chain width were sown as follows:

(1) Native species and *Festuca mairie* and *Agropyron intermedium*; (2) *Poa pratensis;* (3) Tall fescue; (4) *Phalaris tuberosa*; (5) crested dogstail; (6) cocksfoot; (7) lucerne; (8) crested wheat grass; (9) Chewings fescue; (10) certified ryegrass and white clover; (11) *Danthonia pilosa;* (12) browntop (dryland type); (13) browntop (ordinary type); (14) no sowing.

Due to the dry autumn experienced, germination of all seeds was poor, but during the spring the position improved with the exception of *Danthonia pilosa.* By the following autumn, quite a fair sward had been produced by most of the remaining species, the best of which were tall oat, tall fescue, *phalaris tuberosa,* cocksfoot, *chewings fescue,* ryegrass and white clover. Lucerne had failed, due to the seed not being inoculated at time of sowing. The strike was satisfactory, but the plants did not thrive.

Grazing Commenced

Grazing of this field commenced in 1941, two years after sowing, during March, April and July. For the year 1942, steady grazing of this field, in conjunction with field I for six months May 1 to November 1, was carried out.

The recovery of this field after the 1942 grazing showed that tall oat was the best, followed by cocksfoot, blue wheat grass, browntop, *poa pratensis,* subterranean clover, chewings fescue and crested wheat grass, in that order. Tall fescue, *phalaris tuberosa,* dogstail, ryegrass and white clover have made

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a poor recovery, and their swards are opening up.

Third Field

In 1940, a further field, No. III, of 3½ acres, was fenced, worked up similarly to field II, and sown out on March 6 and 7.

It was intended to sow this area with tall oat grass at different rates of seeding, and to find the minimum amount of seed required to produce a reasonable sward, together with some other species. However, at the time of sowing, tall oat grass was unobtainable.

Three strips of 1 chain wide were sown across the area with: 1. Lucerne; 2. Subterranean clover; and 3, a general mixture of a number of species. Across these three strips, a further 14 strips of ½ chain width were sown as follows:—

(1) No sowing; (2) browntop; (3) *Danthonia pilosa*; (4) certified ryegrass and white clover; (5) Chewings fescue; (6) crested wheat grass; (7) meadow fescue; (8) no sowing; (9) cocksfoot; (10) crested dogstail; (11) *Phalaris tuberosa;* (12) tall fescue; (13) *Poa pratensis*; (14) native species consisting of *Poa caespitosa; Poa colensoi, Poa intermedia; Festuca novae zelandiae* and *Agropyron scabrum.* A satisfactory strike of all species was obtained with the exception of plot 14, which was poor.

Field III was given two years to become established, and then grazed for 6 months, in conjunction with fields I and II from May 1 to November 1, 1942.

Ultimate Capacity

The figures of sheep per acre per annum in the trial, although of interest, do not indicate the ultimate carrying capacity of this type of land, since the time factor has been too short to eliminate those species which must eventually go out.

The two seasons' complete spelling of each field before being grazed has built up good pastures which cannot be expected to be maintained with grazing. The grazing of the area has been deliberately heavy to eliminate quickly those species which cannot stand up to the conditions, and at the same time show up those species which appear to withstand this type of management best. On these three fields, the carrying capacity will drop further yet, but future sowings of the most promising species will probably improve the position and supply more exact knowledge regarding them.

At time of writing, the following plants, in order of sequence, appear to be giving the best results:—1. lucerne and tall oat grass; 2. cocksfoot; 3. blue wheat grass; 4. *Poa pratensis;* 5. browntop; 6. *Danthonia pilosa;* 7. subterranean clover; 8. yarrow, and Chewings fescue; 9. crested wheat grass.

Results Analysed

The fact of giving the species approximately 6 months' spell from grazing from approximately November 1. to end of April would be a contributing factor to the success of lucerne and cocksfoot. The annual growth of lucerne is 18 in. to 24 in., and that of cocksfoot 5 in. to 7 in. Tall oat grass produces an annual growth of 6 in. to 10 in., and is readily eaten by sheep. This is countrary to what is usually found in other districts where tall oat grass is considered undesirable as being unpalatable to stock.

Although a relatively poor strike and thin sward of blue wheat grass was obtained, the individual plants are standing up to the grazing conditions and producing highly palatable foliage of 6 in. to 10 in. *Poa pratensis* produces an annual growth of 2 in. to 4 in., but has a very dense sward. Browntop produces a little more growth than *Poa pratensis,* but the sward is not as dense. *Danthonia pilosa* is apparently a slow species to establish, and although its production is not high, it is one of the earliest grasses to commence growth in the spring.

Subterranean clover is apparently suited by the grazing conditions. Yarrow forms a dense turf and is well grazed down by sheep. Chewings fescue withstands the conditions well, but its production and feeding qualities are low. It produces an open turf with individual plants forming small tussocks. Crested wheat grass has a good reputation in America and Australia but the conditions here appear a bit hard for it. It has formed an open, low producing but palatable sward.

Future Investigations

Owing to the prevailing conditions, work on the Pisa Flat Experimental Area has not been extended. Otherwise the experience already obtained would be devoted to the regrassing of a larger area with a cheap mixture of the most promising species. On this class of country, one cannot expend a great deal on regrassing, and in fact some critics of the experiments maintain that further expenditure on the depleted land is totally unwarranted. But the problem is so vast, affecting as it does probably half a million acres, that some attempts must be made to show whether or not economical improvements are possible.

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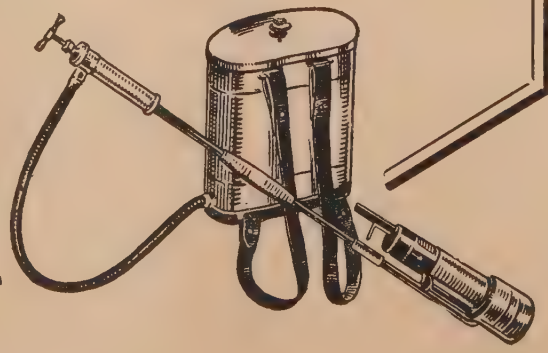

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RING-SPOT

A Fungus Disease of Winter Lettuce

— By —

G. G. TAYLOR, Plant Pathologist, Plant Diseases Division, and LAI-YUNG LI, Assistant Botanist, Botany Division, Plant Research Bureau, Department of Scientific and Industrial Research, Auckland.

Ring-spot on lettuce—seen from below. Note lesions on main ribs and secondary infection giving ragged shot-hole symptoms on leaves.
M. J. Dahlberg Photo.

RING-SPOT (sometimes called 'rust') is caused by the fungus *Marssonina panattoniana* and was recorded on lettuce in New Zealand by Brien in 1942. Ring-spot was first identified from specimens received from Wanganui in 1939, and although not reported before it is probable that the disease had occurred without the cause being recognised. More recently the incidence of the disease has increased, and in some of the older established market gardens, where lettuce crops are grown in close rotation, considerable losses have occurred. Investigations have been undertaken to determine methods of control, and although far from complete, it is felt that a brief account of the disease together with suggestions for control will be of immediate value to growers.

Symptoms

The first signs of infection appear on the main rib of the oldest leaves near ground level as slightly sunken spots, pale yellow in colour. Later the lesions turn brown in colour and spread along the leaf stem (see illustration) often splitting open slightly to give the appearance of insect damage. Spores are produced from these lesions and give rise to secondary infection of the leaves. Here the lesions are seen as small brown spots which may coalesce to give irregular patches of dead tissue. Subsequently the dead areas fall away, giving the plants a ragged shot-hole appearance.

In the seedling bed, the disease spreads rapidly from centres of infection and may cause death of large patches of plants. In the field, plants may be killed where infection occurs at an early stage of growth, but more usually they remain stunted and useless for market purposes.

A bacterial leaf-spot occurs on lettuce which should not be confused with ring-spot. The bacterial spots are darker in colour than ring-spot, larger, and do not give rise to the shot-hole symptoms. Ring-spot lesions on the leaves are invariably accompanied by the symptoms on the lower surface of the main ribs, a condition which does not occur with the bacteria spotting.

Incidence

Ring-spot occurs in all the major vegetable growing districts and is confined to crops of winter lettuce. It is first seen in June, increases in severity up to the end of September, and gradually ceases activity as warmer and drier conditions develop.

Accurate surveys of the extent of damage are not available, but in some Auckland crops observation showed that 50 per cent. or more of seedling plants set out in the field failed to produce marketable heads. Lettuce carrying small amounts of late infection are marketable but deteriorate rapidly once they are packed in crates and are unsuitable for shipment.

Sources of Infection

In an account of ring-spot from England (Stevenson, 1939) it is shown that the disease may be carried in the seed and in the soil, and that weeds may also serve as a source of infection. Work in New Zealand is not sufficiently advanced to confirm these findings. Field evidence suggests, however, that the disease can be seed carried since seedling plants have become infected in new soil not previously used for vegetable growing, and far removed from other crops. Support for the theory of carry over in the soil was obtained last year from experiments in which healthy seedlings planted in infected soil of the previous winter, developed up to 30 per cent. infection whereas seedlings planted in soil not previously used for lettuce growing, remained clean. Further evidence is found in the fact that disease is usually more severe in those gardens where lettuce crops are grown in close succession on the same area of land.

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Control by Spraying

In the past winter, experiments have established the fact that considerable benefit is to be obtained from spraying. In the seedling bed plants were given two applications of Bordeaux mixture 3-4-50, and in the field two and sometimes three sprays of Cuprox 5 lb.—100 gallons. The latter is a certified copper compound and was used in the later sprays because it leaves comparatively little spray residue. In each of six separate trials the sprayed plants showed a significantly higher yield of sound plants than the unsprayed. Over all trials, sprayed showed 8.0 per cent. infected plants and unsprayed 30.0 per cent. infection. Where infection did develop in the sprayed plots it was for the most part slight and did not cause rejection of plants from sale. On the other hand, most of the infected plants in the unsprayed plots were unsaleable. In another trial, plants were lifted from an unsprayed seedling bed, in which signs of ring-spot infection were present, and planted in the field. Three spray applications were then made to half the plants to determine whether the disease could be held in check by spraying. Heavy rain fell during the growth period and ring-spot developed on all plants. It was obvious, however, that infection was much more severe on the unsprayed plants. The plants when graded into saleable and reject showed 33 per cent. saleable from the sprayed and 13 per cent. from the unsprayed.

When spraying, the plants were thoroughly covered from above and no particular care was taken to spray underneath the leaves. Sprays did not cause plant damage and residues were negligible, not in any way affecting the appearance of the lettuce heads when cut. In addition to control of ring-spot, spraying with Bordeaux gives much healthier and more vigorous plants in the seedling bed, particularly where infection from the fungus disease downy mildew is likely to occur.

These trials show (a) that the severity of ring-spot infection can be reduced by spraying and (b) that spraying should be commenced before any sign of disease appears in the seedling beds. It is recommended that the first spray be applied soon after germination and be repeated at intervals of 2 to 3 weeks in the seedling bed and later in the field at intervals of 3 to 4 weeks. Bordeaux 3-4-50 is a suitable spray to use in the seedling bed. Cuprox 5lb-100 was applied in the later sprays of the above trials but residues were so slight that it is probable that Bordeaux could safely be used throughout.

Field Practice in Control

The disinfection of seed by dusting or dipping is under investigation but at present no treatment can be recommended. Rotation of crops is likely to be of value and from overseas experience, 12 months between removal of one crop and planting of another should be sufficient interval to avoid infection from the soil. Particular care should be taken to locate seedling beds on soil which has not grown lettuce for at least 12 months—longer if possible.

Where plants are crowded close together in the seedling bed ideal conditions are provided for the development and spread of ring-spot and thorough coverage with spray is more difficult. In many instances half the seeding rate at present used would provide as many plants suitable for setting out in one field and would improve the chances of disease control.

Field observation shows that ring-spot develops more rapidly in any portion of a seedling bed which is poorly drained. Raised beds would therefore be of advantage, particularly for later plantings when rainfall is high.

Where ring-spot appears in the seedling bed, plants in the infected area should be dug out and destroyed. In removing these plants it would be as well to include apparently healthy plants from around the diseased one as infection in the early stages is difficult to detect. This point is important since it has been shown that once infection is established in the seedlings, control of ring-spot by spraying is difficult and often impossible.

References

Stevenson, G. B., 1939, Journal of Pomology and Horticultural Science, 17, pp. 27-50.

Brien, R. M., 1942, N.Z. Journal of Science and Technology, 24, pp. 62a-64a.

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— By —

A. M. W. GREIG,
Citriculturist, Wellington

THE approximate number of New Zealand grapefruit (improved strain of the Poorman orange), sweet orange, and mandarin trees planted in commercial orchards in New Zealand as at the end of December, 1943, and the estimated average annual production at that date, are as under:

	Trees.	Packed bushels.
N.Z. Grapefruit	24,000	50,000
Sweet Oranges ...	39,000	10,000
Mandarin	2,300	1,000

These facts are of topical interest, as indicated by the frequent inquiries received by the Department of Agriculture from people who contemplate citrus-fruit-growing as a living. Accordingly this summary has been compiled of the principal factors to be considered before anyone embarks on citrus-growing as a commercial venture.

Qualifications

For the successful citrus-grower an all-round general experience of fruit growing and a knowledge of the underlying horticultural principles are desirable. In addition, adequate finance should be available so that the grower may be able, at the opportune time, to do all the essential work.

Points of importance for the intending grower are:—

1. Make a personal inspection of all available orchards in citrus-growing localities, after obtaining general recommendations from a reliable authority. £50 spent on inspection of properties may mean the saving of £50 per annum later on.

2. Do not be in an undue hurry to purchase. There is no truer saying than "Act in haste, repent at leisure," as far as the establishment of a citrus orchard is concerned. If you are in a hurry, it is advisable to buy an approved property already developed

3. Make full inquiries into the matter of diseases established in the district and the practices associated with manuring, spraying, pruning, etc. These in the main can more readily be learnt in association with practice. However, major mistakes in the choice of soil or site can seldom be overcome.

4. Do not contemplate developing a citrus orchard as a week-end hobby unless you have unlimited capital and can undertake personal supervision and secure reliable employees. Too often capital is wasted through inadequate knowledge, or knowledge is wasted through inadequate capital. Finally, do not attempt to start the establishment of a citrus orchard as an absentee owner.

Horticultural Principles

Horticulture is a wide science, requiring many years of experience and study. The intending citrus-grower should know how a tree breathes and how it obtains its carbon and other requirements; how water enters a tree and is transpired by the leaves, as well as the general environmental conditions most suited to citrus culture. He should also have some knowledge of plant nutrition, growth and reproduction. These depend on climate, topography, soil and the influence of other plants and animals.

Such knowledge can be acquired through earlier years having been spent in a plant nursery or in an orchard, by a course in horticulture, agriculture or science, with botany as a major subject and geology, chemistry, physics and zoology as minor subjects.

Adequate Finance

A citrus orchard requires to have approximately 5 acres in fruit-trees, with an additional area up to 5 acres for house, garden, paddock, etc. To commence a commercial orchard, between £2000 and £2500 is usually required, depending on the house it is proposed to build—say £1000 for the house and between £1000 and £1500 for developing the orchard itself. Apart from serious lack of horticultural knowledge and the choice of an unsuitable location, inadequate finance probably causes more failures in citrus-fruit-growing than any other cause.

To establish an orchard takes from 5 to 10 years, and finance must be

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DAIRY FACTORY MANAGERS

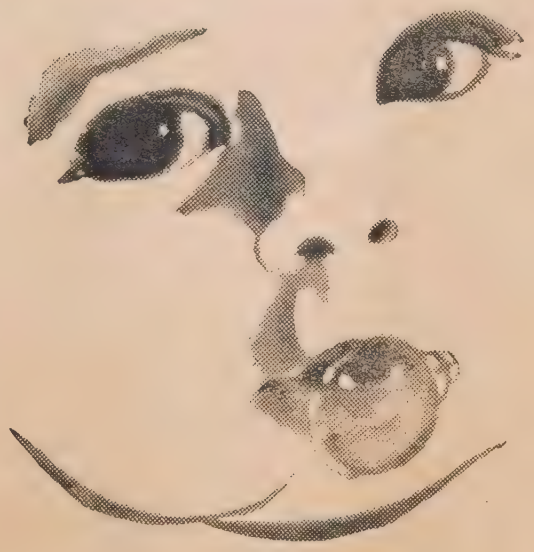
Intending applicants are hereby notified that applications for registration under the Dairy Factory Managers' Regulations should reach the Registrar, Dairy Factory Managers' Registration Board, c/o Department of Agriculture, P.O. Box 3004, Wellington, on or before 1st May, 1944. Forms are available from the Registrar.

Attention is drawn to the fact that under the Regulations, any application which is received by the Board after the 1st May, shall not, except in special circumstances, be considered by the Board until after 1st May, 1945.

H. G. PHILPOTT, Registrar.

N.B.—*This notice refers to persons who are NOT AT PRESENT HOLDERS OF CERTIFICATES. Notice of renewal and renewal form will be posted to every registered manager by the Registrar.*

ISSUED BY THE DEPT. OF HEALTH



Good Teeth are Priceless

GUARD THEM FROM THE VERY START

EXPECTANT MOTHERS: Your baby will be born with the first set of teeth fully formed. Your diet must be balanced to help them develop soundly. Your ante-natal clinic know exactly what you should eat—follow their advice in every detail.

BABIES: Breast-feeding helps the teeth to continue developing and encourages the jaws to grow because the natural gnawing muscles are brought into play. If the jaws do not grow properly, teeth will be crowded, and crowded teeth invite decay.

If your baby *has* to be bottle-fed, use a small-holed nipple, and see that the bottle is held PROPERLY. When the first tooth is cut, give baby hard things like rusks, twice-baked bread, and bones to chew—let it exercise its jaws naturally.

CHILDREN:

(1) From the start, see that a healthy taste in food is cultivated. Use as little sugar and white flour as possible. Give the very minimum of artificially sweetened and refined foods.

(2) Give the maximum of body-building and protective foods—milk, cheese, fish, liver, whole-grain cereals, fruit and vegetables. And don't forget Cod liver oil.

(3) Keep teeth clean. Finish each meal with fruit or raw carrot, and use the tooth brush vigorously after meals.

(4) Have teeth examined every 6 months.

Your child can attend a School Dental Clinic from 2½ years old.

16

FOR A HEALTHIER NATION

available to do the right job at the right time. Finance is not only required to buy land, to fence and shelter it, and to purchase trees and plant them, but also to bring these trees to maturity. An orchard does not commence to pay when it commences to bear fruit. Such an idea is a common fallacy. It commences to pay, if the foundation has been sound, only when the trees reach a production of three to four packed bushels each, or more. In addition, sufficient finance must be available in reserve for a fruit-grower to be able to withstand early reverses such as losses due to drought, frost, hail or wind damage, which may occur at any time even in a relatively suitable locality.

Finally, it must be realised that the growing of sweet oranges and New Zealand grapefruit cannot be regarded as an entirely lucrative occupation. To be successful, a grower of these fruits must be able to obtain a good average quantity of high quality fruit and be able to sell it at a payable price in competition with overseas supplies.

Outdoor Life

An interest in the work is essential in any occupation, but an intending citrus-grower, if he has been accustomed to a regular occupation within doors, should realise there are certain disadvantages in a full-time, outdoor occupation, owing to a partial dependence on weather conditions.

In areas of heavy rainfall this may mean time lost owing to rainy days or that certain operations, such as spraying or cultivation, may require to be repeated following unexpected rainfall. This may upset the whole season's programme of operations, unless a grower has equipment available and is prepared to work overtime. This involves extra energy, and additional expense is often caused through these unforeseen circumstances.

Many men, although they may be conscientious and hard-working, would be quite unsuited for a job of this nature, because the fruit-grower must have foresight and be able to plan months ahead. His plans may have to be altered according to weather conditions, market requirements or mechanical breakdowns. Most important of all, he is his own employer and must keep steadily at whatever job he has set himself.

Other Attributes

Common sense and stability are important attributes for a successful fruit-grower. Obtain the best advice and stick to it. A small area well maintained is usually more profitable than a large area poorly managed.

Owing to the increased mechanisation of the farm, with its tractors and

rotary hoes, its power sprayers, grading machines and lorries, mechanical ability is a definite asset, and so also is a knowledge of carpentry and allied crafts.

Good health is essential for a fruit-grower, but many people are under the impression that citrus-fruit-growing is an ideal life to which to retire. This is true, if, on retirement, a man has an adequate income with which to maintain himself and develop his orchard as well, but as it takes up to ten years for an orchard to become well established, the average man, on retirement, prefers an orchard already developed. The ideal age to commence citrus-fruit-growing is about 28-30 years, after general experience in horticulture has been obtained. There are then sufficient years ahead to plan and develop an orchard right from the beginning.

Choice of Site

The choice of a suitable orchard site is very important and several points have to be considered, including that of climate.

As citrus trees require sub-tropical conditions, commercial planting should be confined to the relatively frost-free belt from Wairoa and Gisborne, through the Bay of Plenty and up the East Coast of the North Island as far as Mangonui, North Auckland. Even within this belt, there are areas more frost-free than others. The risk of a severe frost every ten years is sufficient to make a good orchard a second-rate one commercially. It is a wise measure when selecting a locality to find out everything possible regarding areas subject to damaging frosts. Tender plants, such as Poinsettia, or tree tomato, are good indicators as to whether the proposed location is sufficiently frost-free for citrus culture.

Soil

For citrus culture the soil should be deep and fairly rich. The most important point, however, is that it should be capable of retaining moisture during dry weather, as this water requires to be steadily available to the trees. A soil rich in humus is desirable, as such a soil is more capable of retaining moisture. Neither light sand nor a heavy clay is suitable for citrus trees; the one is too porous, the other insufficiently porous. The soil must have depth, and no hard pan within two feet of the surface. The greater the depth, the greater the probability of growing large trees, and only from large trees can a high average annual production be expected.

Rainfall

Water is absolutely essential to successful citrus production, but it is especially necessary during the spring and summer months. A citrus tree needs as much water as it can get, provided the soil is not so saturated that air supply is deficient. In New Zealand, where irrigation is seldom practised commercially, citrus trees are dependent on rainfall for their water supply. The rainfall must not only be adequate for the year, but it is more important that it should be evenly distributed throughout the year, the ideal being approximately 4 to 5 inches per month. Citrus trees need water all the year round.

Topography and Drainage

The orchard site should be practically level, or if there is a slight slope it should have a northerly aspect. Soil erosion may become a problem if the site is too steep. Shelter becomes more difficult to achieve, and all cultural and harvesting operations are more expensive on an undulating orchard than on a level one.

Although emphasis has been laid on water requirements, this water should be slow-moving, and not stagnant. Citrus trees will not tolerate "wet feet." If the soil does not naturally drain freely, artificial drainage may be necessary. However, in choosing an orchard soil, natural drainage is desirable.

Shelter

A well-sheltered locality is essential. Natural shelter, either through the topography, native bush, or already established shelter trees, is a great advantage. If the available shelter is insufficient, adequate shelter must be provided before the citrus trees are planted. If the site is unsheltered, it may mean waiting for three years to obtain necessary shelter. However, as shelter is essential for the successful establishment of a citrus orchard, it is much better to wait than to plant the citrus trees too soon.

Transport Facilities

The cost of transport to markets, whether by lorry, rail or ship, is a permanent overhead charge against the orchard, not only on the materials required for production, but also on all fruit that may be eventually marketed from the orchard. Thus proximity to rail, port or market and the costs involved should always be seriously considered when the start of a citrus orchard is under consideration.

Size of Orchard

About 5 acres planted in citrus trees can be considered an adequate area for an owner-occupier. Allowing the additional area required for shelter-belts, house site, garden and paddock and the growing of green-crop for mulching between 10 and 15 acres is required. The amount of waste, or scrub land, growing gorse or fern, should be kept to a minimum. Such an area seldom gives financial support, and may be an embarrassment through the additional work required in its maintenance, and the ever-present menace of fire.

In general, it is desirable to purchase an area close to other orchards.

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for then the purchaser is able to observe the degree of success obtained by others and endeavour to rectify mistakes or improve upon past efforts. Proximity to other growers is also of value in that one is then able more readily to join a growers' organisation for discussion of common problems, and to attend lectures and field-days. Probably such a place would also be more accessible to the local orchard instructor, who is always available to assist in supplying necessary information.

The Trees

The commercial citrus-grower cannot think too soon about the trees he is going to plant. As soon as a suitable orchard site has been chosen, consideration must be given to the trees. Principal requirements are:

(a) Root stock,
(b) Variety,
(c) Budwood,
(d) Healthy, vigorous, well-formed trees.

Next to the choice of site, the choice of the trees is most important. All future operations, such as manuring, cultivation, spraying, and picking, are going to be concentrated on the trees that are planted. If they are wrong, most, if not all, future operations may be completely or partially wasted. If ten, or more, per cent. of the trees are poor, the remainder will have to bear a higher average to maintain the economic level. The important thing to remember is to plant first-class trees on a first-class site, so that the young citrus trees will have the assistance of good heredity and good environment.

Root Stock

Citrus trees raised from pips do not grow true to type, so the practice has developed of growing the root system only from pips, and later working dormant wood of the chosen citrus variety on to this root-system. This union forms a compound tree, the root-system of which is known as the root stock, and the top portion the budwood. The process by which bud and root stock are united is a technical operation requiring practice, and is known as "budding." The advantage of "budded" trees over trees grown from pips alone is that they bear more uniform fruit and commence bearing earlier. Furthermore, the root stock can be chosen to suit special conditions.

In New Zealand, three main root stocks are used at present—the sweet orange, rough lemon or citronelle, and trifoliate orange. For general purposes, the sweet orange is recommended as the most suitable all-round root stock; but the trifoliate orange gives the best quality fruit. It is necessary for certain orange varieties and most mandarins, but requires a rich, alluvial soil, with adequate water during the summer months.

The most successful varieties of New Zealand grapefruit, sweet orange, mandarin, and grapefruit at present growing in New Zealand are now outlined.

New Zealand Grapefruit

The name grapefruit is usually applied to certain citrus varieties which bear fruit in grapelike clusters. Such fruit is usually pale skinned. It is served for breakfast in the United States, and is also becoming very popular as a breakfast fruit in New Zealand. Trees of the American grapefruit varieties have not succeeded commercially in New Zealand, but our own variety, known as New Zealand grapefruit, is equal to, or excels, the imported fruit.

The New Zealand grapefruit was formerly known as the Poorman orange and originated on the property of Sir George Grey, Kawau Island, Hauraki Gulf. Many Poorman orange trees bear coarse fruit with a strong

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metallic flavour, which is only suitable for marmalade purposes. The name New Zealand grapefruit was given to a thin-skinned, semi-sweet, high quality strain of Poorman orange. This is the variety that is today recommended for commercial planting. It is usually sufficiently matured for marmalade making by mid-May and for dessert purposes by the beginning of August. It is regarded as a sweet orange-pomelo hybrid, whilst the American grapefruit is a lemon-pomelo hybrid.

Sweet Oranges

Many named varieties of sweet orange have been introduced to New Zealand, and very conflicting results have been obtained in the citrus districts, depending, no doubt, not only on the varieties themselves, but also on the root stock used and the environmental conditions under which trees were grown.

These varieties fruit from August till December. Those which ripen earlier are usually of better quality, but their marketing period coincides with that of oranges from the Cook Islands. The later-ripening varieties mature when there are fewer imported oranges available; but, on the other hand, they are usually of inferior quality. This is, no doubt, due to the fact that the fruit ripens as spring-growth commences, and thus there is a tendency for fruit to dry out or revert in colour unless harvested at the correct time.

The two principal varieties established are the Washington Navel and Valencia Late. These two varieties have been planted out to a greater extent than any others. This does not mean that they have been proved to be the most suitable under New Zealand conditions, but rather that growers have preferred to follow Australian practice until other varieties are proved. At the present time, a series of trials are being carried out by the Plant Diseases Division, Mt. Albert, Auckland. These trials concern rootstocks and the principal orange varieties, but no definite results can be expected for at least another five years. In the meantime, anyone planting sweet oranges should concentrate on obtaining budwood from proved trees rather than variety alone. Named varieties worthy of consideration and ripening periods are:—

Best's—Aug.-Oct.
Carter's Navel—Aug.-Oct.
Hamlin—August.
Lue-Gim-Gong—Mid-Sept.-Dec.
Navelencia—Aug.-Oct.
Robertson Navel—Aug.-Oct.
Ruby Blood—Sept.-Oct.
St. Michael—Sept.-Oct.
Valencia Late—Sept.-Mid-Dec.
Washington Navel—Aug.-Oct.

In addition, there are various seedling orange trees scattered throughout the citrus districts which bear good quality fruit.

Mandarins

At the present time, the culture of mandarins in New Zealand is not as well established as that of sweet orange, and it is doubtful whether mandarins can compete commercially with sweet oranges under equal conditions. Therefore, in any proposed citrus orchard, not more than 10 per cent. of the trees should be mandarins. The most successful varieties at the present time, and those worthy of further trial, are:

Canton, Clementine, Kara, Satsuma, Temple and Thorny.

As indicated earlier, the pale-skin American type of grapefruit does not normally succeed commercially in New Zealand; but there is one pale-skinned type of grapefruit that is worthy of consideration, and it is an introduction from Australia — the Wheeny.

Budwood

The strain is of even greater importance than the variety, and the greatest care should be taken in obtaining budwood from none but outstanding trees of any variety chosen. This point can be illustrated by the fact that the Valencia orange originated from a place of that name in Spain. When the citrus industries commenced in America, Australia or elsewhere the original budwood may have been cut from original trees at Valencia, or they may have come indirectly. For instance, New Zealand Valencia oranges have been introduced through Australia.

In the course of time, trees known as Valencia oranges in one country may be superior or inferior to trees of the same name in another country, quite apart from the fact that growing conditions may be different. Thus there become different strains of orange, and yet they are all known under the varietal name of Valencia. This emphasises the necessity for careful bud selection, and future plantings should be made as far as practicable from the most outstanding trees at present growing in New Zealand.

Healthy Trees

It will have taken four years to grow a citrus tree in the nursery, two years from the time of sowing the pips for rootstock purposes until the stocks are ready to be "budded," and a further two years from the time of budding until the tree is ready to be planted out in the orchard. At the time of planting, young citrus trees should have the following characteristics:

A mass of fibrous roots.
Bud union six or more inches above ground level.
A straight, strong main trunk of 20 inches from the bud union to the fork.
Three to five evenly-spaced and well-balanced leaders at least 9 inches long.

Preparation of Land

An aspect that must receive due consideration is the thorough preparation required by the orchard area before the trees are planted. With virgin soil, or soil which has not been well prepared, even if shelter is adequate, two full years should be spent in soil preparation. This will necessitate a preliminary ploughing, followed by several months fallow; then discing, harrowing, and the sowing of a green manuring crop such as blue lupins. In the second year, sub-soiling should be done on most areas, and cultivation and green manuring repeated.

This preliminary preparation of an orchard site is an absolute essential. Where it is done, the trees will not only soon equal other trees planted two years earlier without adequate soil preparation, but will shortly excel, and always maintain superiority over, trees planted without such preparation, other factors being equal.

Conclusion

It is hoped that these brief notes will be of value to those who are contemplating the commercial establishment of a citrus orchard consisting of New Zealand grapefruit, sweet oranges, mandarins or other grapefruit. Further advice may be obtained by contacting the Orchard Instructor at Kerikeri, Auckland, Tauranga, or Gisborne, or the Department of Agriculture, Wellington.

Vegetable Growing in the Home Garden

Everyone endeavouring to grow vegetables in a home garden will find inspiration and instruction in an excellent booklet compiled by the Department of Agriculture, entitled "Vegetable Growing in the Home Garden." It has been written with a view to assisting more specially those thousands of amateur gardeners who have been spurred by the "Dig for Victory" campaign.

The author, Mr. D. K. Pritchard, the Department's Instructor in Vegetable Culture, has avoided technical terms and produced an essentially helpful and concise booklet. Whatever gardening terms are used that might be meaningless to amateurs are fully explained in a glossary. In addition the book is carefully indexed. Home gardeners should not miss it. Copies of "Vegetable Growing in the Home Garden" are available at any office of the Department of Agriculture in New Zealand. Price 6d., post free.

JOBS IN PEACE TIME

"THE NATION WHICH WISHES TO BE GREAT MUST PLACE ENTERPRISE AHEAD OF SECURITY—"

Achievement is not something which happens of its own accord. Behind every great musician, artist, or scientist, is the encouragement given by those with vision . . . the same vision which, coupled with daring and initiative, enables men to grasp and bring to realisation a new enterprise which benefits not only themselves and those around them, but the nation as a whole.

" . . . We must regard innovators, experimenters, starters of enterprises, as peculiarly useful citizens and go out of our way to furnish them a congenial and hospitable environment .... We must strive to increase the proportion of our citizens who become experimenters and innovators and who make their living, not by getting on someone else's payroll, but by creating payrolls of their own."

SUMNER H. SLICHTER,
Professor of Economics, Harvard University.

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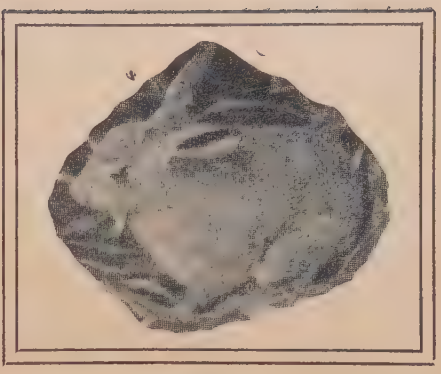
The Livestock Division gives advice on

Control of the Rabbit Pest



IN DISTRICTS where the rabbit pest may show signs of getting out of hand, or, indeed, in any district where rabbits, even in small numbers, are to be found, settlers are strongly advised to consider the formation of a rabbit board.

Time and again, it has been proved that the best and cheapest way to get rid of the pest is by concerted action, and this can only be taken by a board elected by the settlers themselves to look after their own interests.

The procedure is to contact the local inspector of stock, who will give the necessary advice, form a small committee, and call a meeting to fix a boundary. The usual method today is to rate on the acreage basis. The board strikes a rate and the Government subsidises the rate up to 4d. per acre. This is the method which has been carried out by the already established Rabbit Boards, and the average rate works out at below 4d. per acre.

Taking a board with 60,000 acres, the ratepayers would pay 2d. per acre and the Government subsidy would be 2d. This would give the board an income of £1,000 per annum. In addition to this, the Government also refunds to the board the cost of rabbiting unoccupied Crown and Native lands in the board's area, the work being carried out by the board's rabbiters, with the prior approval of the Minister of Agriculture.

Throughout the Dominion there are now 93 rabbit boards constituted, and, with few exceptions, they have done excellent work. They are undoubtedly responsible for a lessening of the rabbit pest in their areas and the consequent increase in farm production which has taken place in many districts previously badly rabbit-infested.

During the war of 1914-1918, the rabbits increased to an alarming extent in the Dominion, especially in the Waikato. This of course was due to the shortage of suitable farm labour. It is noticeable, since the commencement of the present war that there has been an increase in the number of rabbits in certain localities, and this is an opportune time to bring before the farmer the necessity of doing all in his power to control the pest.

In the southern portions of the Dominion, where the winters are more severe, there is a distinct break of some months between breeding seasons, but in parts of the North Island, particularly in the warm coastal country, it is not uncommon to find rabbits breeding throughout the winter months. Under such conditions, it is possible for a doe to produce as many as ten litters in a year (the period of gestation being 28 to 30 days). From records made over a period of many years, it has been found that six is a fair average litter. That number may for all practical purposes be taken as reasonably correct.

Assuming (1) that the average litter is six, (2) that each doe will produce in the year eight litters of equal sexes, and (3) that the young females will breed at 15 weeks, the total increase for the year from one pair of rabbits will be over 500.

This total is contingent upon there being no casualties; but, allowing that 50 per cent. of this increase become casualties before the beginning of the second year, the second breeding season will thus commence with over 250.

It will thus be seen that it is reasonably possible for one pair of rabbits to increase in three years to between nine and ten millions.

Now, allowing that ten rabbits eat as much as one sheep, it is evident that one pair of rabbits is capable of reducing in three years the stock-carrying capacity of our lands to the extent of a million sheep.

Sweetest Grasses

Rabbits are keen judges of pasture; their movements are not restricted by ordinary stock-fences, and, having a more or less free choice, they select the sweetest and most nutritious grasses. Therefore, the stock-feeding value of the pastures largely depends on the freedom of the lands from rabbit infestation. The economic loss to this Dominion through the depredations of the rabbit pest is extremely large, running into millions of pounds each year.

Over a ten-year period, 1920-1929 inclusive, the number of rabbit skins exported was 149,450,537. Those exported represent considerably less than half the rabbits actually destroyed, to which must be added the number still remaining.

Poisoning

Phosphorised pollard poison is the quickest and cheapest method of wholesale rabbit destruction, but in order to obtain satisfactory results certain conditions are essential. The rabbits must be undisturbed and unsuspicious of danger. The poison must be laid when weather and pasture conditions are suitable. Dry, hot, summer weather is not suitable, and continuous wet weather is equally unsuitable. The best results will be obtained just before the autumn growth sets in, while the pastures are bare and the weather is cool and moist.

The freshly-turned sod or furrow will then be more attractive, and the bait will remain softer and more palatable. One or two pellets (not more) should be laid on the cleanest part of a newly turned sod; and the sods should be placed at intervals of three to six yards, according to the extent of infestation, in lines about 1½ to 2 chains apart. When laying the poison, the hands of the operator must be kept clean. Rabbits will not touch poison tainted with oil, fat, tobacco, etc. Avoid skinning dead rabbits while engaged in laying poison.

No Disturbance

Satisfactory results from the use of poisons will not be obtained on country recently disturbed by trapping, dogging, or shooting. Rabbits should be disturbed as little as possible for at least two months before poisoning operations are commenced, and when the work is commenced it should be continued and completed as quickly as possible throughout the whole of the infested area. Phosphorised pollard in pellets ready for use is manufactured and sold by manufacturers at Invercargill and Masterton, respectively, and by the Department of Agriculture at Hamilton, so there is no necessity for farmers to make their own bait.

Use of Strychnine

Baits for poisoning with strychnine have to be made on the farm, and the methods adopted are as follows:—

Cut up 15 lb. of carrots into small cubes, add 1 lb. of icing-sugar, but no strychnine, and drain off any liquid after the sugar has dissolved. Lay the sweetened cubes in freshly-made, light plough-furrows, spade-chips, or scrapes,

two cubes every two to three yards apart. Feed in this manner for two or three nights, and, if the rabbits eat the carrots, proceed as follows:—

Cut up 12 lb. of clean carrots into small cubes, add 1 lb. of icing-sugar, and allow the carrots to drain until all the surplus liquid runs off. Then take 1 oz. of finely-powdered strychnine, and sprinkle a teaspoonful at a time over the carrots until the ounce is all mixed, stirring well after each application of strychnine; then add 1 lb. of icing sugar to cover the taste of the strychnine, and allow the carrots to stand for two hours before laying. One poisoned cube every three yards is sufficient.

Liberal free-feeding for at least two nights is strongly recommended—in fact, it is practically essential for success. The baits in free-feeding should be similar to those which are poisoned, and should be laid in the same way. If the baits free from poison are well taken, lay the poisoned carrots on the third day; if not, free-feed for a third day. It has been found advisable to put out at least twice the quantity of free-feed as compared with that poisoned. The poisoned baits should be laid from about two yards apart to three yards, as stated previously, according to the infested state of the land.

Closing Burrows

Having reduced the pest to a minimum with the use of poisons, which is the quickest and cheapest method of destruction, all burrows should be closed and other cover destroyed as far as possible. Do not waste gas on empty burrows. Close them first, and any that are re-opened should be then treated with carbon bi-sulphide, cyanogas, or sulphur smoke. Traps, dogs, and gun may now be profitably used to clean up the stragglers that have so far escaped. Remember that every doe destroyed will prevent a possible increase of hundreds before the end of the season.

The importance of destroying all burrows cannot be over-estimated. While this class of cover is left the danger of re-infestation remains.

On open grasslands where the cover is mainly warrens, fumigation with carbon bi-sulphide or cyanogas is easily the most effective method of destruction if used under suitable conditions. The best results will be obtained in calm weather while the soil is wet.

On pumice, or open, sandy ground, satisfactory results will not be obtained in hot, dry weather, when the gas will readily escape through the porous dry soil, and may not reach the farthest recesses of the warren. Before treating the burrows, the surrounding country should be thoroughly hunted with dogs, to drive underground any rabbits that may be outside.

Carbon Bi-sulphide

Carbon bi-sulphide, if properly used under suitable conditions, will prove 100 per cent. effective. It gives the enemy no option. An empty poison tin with a close-fitting lid may be used to carry the material when treating burrows. Fill the tin with pieces of sacking about six inches square, pour in sufficient carbon bi-sulphide to thoroughly saturate the sacking, then add sufficient water to cover the carbon bi-sulphide, so as to prevent evaporation. When the burrow is reached, put one piece of sacking well into each entrance, close with earth, and tramp hard to prevent the escape of gas.

Startling Results!

£10 and more, extra income per acre

Over the past seven years, literally thousands of farmers have written telling me that, as a result of using my Harrow, they got far more abundant and better feed, and doubled their hay crops. They increased their production (and also, incidentally, many stated that they got less stock trouble). However, because of the vagaries of the climate from year to year, it was impossible for me to get any definite convincing figures on the actual benefit derived from the use of my Harrow. (Without avail, I invited the Department of Agriculture to conduct experiments!)

It has now been left to my Hawke's Bay Agents, Messrs. de Pelichet, McLeod, & Co., Ltd., Stock and Station Agents, of Hastings, who have Branches at Napier, Gisborne, Port Ahuriri, Waipukurau, and Wairoa, to do a great service to the farming community of this country, by disclosing, as a result of experiment, the **actual** benefit that has been, (and can be got), from the use of the "BEVIN" Harrow.

Hereunder is a letter from Messrs. de Pelichet, McLeod & Co., Ltd., written on the 8th February, 1944:

"As you know we do a big business with grass seed, and this season experimented on this class of work with rather startling results. In one paddock half was "BEVIN" Harrowed and half was left unharrowed. The yield was 50 bushels to the acre on the harrowed portion, and 35 on the other. On two other tests the results were on the same proportion."

(The 15 extra bushels meant an additional £10 or more per acre extra income).

Every farmer will agree that seed and growth of grass are synonymous—in other words, a poor crop will have a low seed yield and vice versa.

NOW, let us analyse these "startling results." On a percentage basis, **by actual weight**, and not guess-work, the "BEVIN" Harrowed area yields 42.86% more than the other portion. This means that any farmer using a "BEVIN" Harrow can definitely increase his annual growth by over 40%. (Even in the times of an abundance of fertiliser, such a phenomenal increase was not attained).

The "BEVIN" Harrow will cost you a devil of a lot less than heavy fertilising, and, what is more, you don't have to buy one every year. I don't know yet of one which has worn out, and many I know have done tens of thousands of acres of work.

If you have got a "Bevin" Harrow, please **use it**—if you haven't got one, you have three alternatives—**borrow, steal, or buy** one. As you will want to use the Bevin as often as you possibly can, I look forward with confidence to receiving this handy enquiry coupon with your name and address duly appended. Thank you!

Hundreds of Farmers tell me that the **"BEVIN" ELECTROFENCER** is just as superior in its field as is my Harrow. (In the coupon there is provision to bring you particulars of this, also.)

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GRAPE VINES FOR HOME GARDENS

THE planting of grape-vines in New Zealand, and the consumption of grapes, could very readily, and with benefit, be increased. Many people think that grape-vines are difficult to grow, or that the vine requires a hot climate or a glasshouse in order that the fruit will ripen, but actually grapes grow to perfection in temperate climates. Among the 5,000-odd varieties, there are some that will ripen in almost any sunny spot in New Zealand, provided that in certain areas protection from frost, during the months of October and November, be given.

A few vines to supply the household with table grapes can be grown in almost any garden which has a well-drained soil and receives plenty of sunshine. No very special knowledge is necessary.

— By —

B. W. LINDEMAN,
Vine and Wine Instructor,
Te Kauwhata.

THE usual time for planting vines outdoors in New Zealand is August and September. There are two periods during which both vines and vine-cuttings can be planted successfully. In open, well-drained soils, it is an advantage to plant them in the autumn, when the vines are losing their leaves. They will then start forming roots almost at once, and be in good condition to make an early start in the spring. On soils that are liable to be wet in the winter, the vines and cuttings should be planted only in the spring, when the ground begins to warm again.

Suitable Stocks

In Auckland City and throughout the Auckland Peninsula, and as far south as a line from Tauranga to Raglan, it is essential to plant vines that have been grafted on Phylloxera-resistant stocks, as this destructive insect is spread over most of that part of the country. In fact, as the insect is liable to spread southwards, it is a useful precaution to plant vines on resistant stocks in adjoining districts. The outlay for grafted vines is, of course, considerably greater than for cuttings. Grafting vines on suitable stocks improves the setting of shy-setting varieties and increases the crops of most varieties. It is important, however, that the right stocks should be selected. They should have perfect affinity for the scion or fruiting part of the vine and be adapted to the soil conditions of the district in which they are to be planted. There are a number of stocks in use, all of American origin, and they differ, some of them very considerably, in their individual soil requirements.

Selection of Land

Table grapes can be grown successfully on flat land if it is well drained, but, as size and appearance in the fruit are generally demanded, the soil may be richer than that required for wine grapes. Soils rich in food for grape vines are not necessarily those which are considered rich for general cropping purposes, as a survey of the actual vineyards in this country would prove. A poor soil to which the lacking constituents can be added is better for vines than an over-rich one.

The most important centre of table-grape production in New Zealand is in the Waikato, at Te Kauwhata, where the vines are grown on a stiff clay with very little top soil, but, notwithstanding these conditions, the vines produce heavy crops of handsome and luscious fruit, the result of sunshine and careful treatment, for no fruit responds to careful treatment so well as the grape.

Fig. 1.—Vine cuttings prepared for planting.

Fig. 2.—A cleft-grafted vine rootling before trimming previous to planting. The dotted line shows where the root system should be trimmed to, prior to planting.

Where there is a choice of situation, a gentle slope facing the north-east, north, or north-west should be preferred, in that order, for planting the vines, and if they are being planted in rows, the rows should run from north to south where the lay of the land permits.

Soil Preparation

Before the vines are planted the soil should be thoroughly worked, so that the roots will be free to spread rapidly through the soil in all directions. When the roots have started to grow, deep cultivation should be abandoned, as it would destroy the roots and rootlets, which, in New Zealand, are generally to be found within a few inches of the surface.

On compact subsoils having little topsoil, the topsoil should be turned to a depth of 8 in. to 10 in. and the plough followed along the furrow by another plough without a mould-board to subsoil it another 4 in. Alternatively, one plough with a subsoiling attachment may be used. Where the soil is of the same quality to some depth and is well drained, a deep ploughing will suffice.

When the ground is covered in grass, it should be skim-ploughed in the autumn, and ploughed deeply across the direction of the skim furrows in

early spring before the final cultivation.

It will give the vines a good start, and feed them for some time afterwards, if about 5 cwt. or 6 cwt. of bone-meal per acre, or 2 oz. per square yard, is applied to the surface soil before turning it in. No other manure should be applied when planting.

Vine-roots develop best in newly-turned-in surface soil, and for this reason it is preferable to plough a couple of inches more deeply than it is intended to plant the vines. After ploughing, the ground should be worked to a fine tilth as for the sowing of cereal crops. The principles that apply to ploughing apply also to spade work in the garden. In soils lacking in humus, blue lupin may be sown in the year preceding planting, at the rate of 100 lb. of seed, with 1 cwt. of superphosphate, to the acre, and turned in when in flower.

Fig. 3.—An unpruned vine.

Planting

For single vines, a hole 3 ft. in diameter and 18 in. deep should be dug out, and the bottom filled with a mixture of topsoil and bone-meal.

If it is intended to plant cuttings, these should be selected from medium-sized, well-ripened canes of the season's growth, discarding the immature wood from the thin ends. A single eye cut with ½ in. of wood, placed in the soil like a seed, will grow into a vine if the soil is kept moist; but for general planting it is usual to cut lengths of cane from 6 in. to 10 in., though cuttings of a foot, or even 18 in., may be required in very open or gravelly soils liable to dry out to a considerable depth in the summer.

If the cuttings are to be planted in the spring, the wood, when taken from the mother vine, can be left entire and buried in dry sand in a cool, sheltered place until wanted for planting, when

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it should be cut into suitable lengths and placed upright in water for 48 hours before planting. This treatment is applied to both cuttings and rootlings received from outside sources. When not required for immediate planting, the cuttings or rootlings should be buried under a little moist soil in a shady spot.

To prepare vine cuttings for planting the bottom node, or joint, is cut through below the bulge, and 2 in. of wood left above the top node.

Most of the roots will grow from the bottom of the cuttings. Any found growing within 3 in. or 4 in. of the surface should be cut off close to the stem during the two winters following planting.

The cuttings can be planted either directly in permanent position or in a nursery about 6 in. apart; in either case extra cuttings should be planted to replace failures.

To plant vine-cuttings in prepared ground a hole should be made for each with a shovel or mattock or other suitable implement, and the cuttings inserted so that the top bud is level with the surface of the soil. The earth should then be well trodden down around the cutting. It is essential that no air space should be left around the cutting, as moulds are apt to form in them and cause decay. When the soil is dry, water poured into the hole containing the cuttings will moisten the soil and at the same time help to pack it. A 2 ft. stick should be placed about 9 in. in the ground to act as a support to the young vines. Now form a mould of friable soil to cover the 2 in. of wood above the bud, this will retard the growth from the bud, which is liable to get ahead of the root growth and dry out the cuttings before the roots can supply any sap.

In choosing grafted rootlings, care should be taken to select only those with perfect unions. A flaw in the union permits soil bacteria and fungi to enter into, and eventually destroy, the vines, often after five or six years' apparently healthy growth.

To prepare grafted vines for planting, all shoots except the strongest one are cut off, and that shoot is left intact. This is important. All the roots, except the bottom ones, are then trimmed off, leaving mere stubs of these latter 3 in. in length, and the vines are planted in the same manner as the cuttings, but with the lower extremity of the union 2 in. above the ground-level. The vine is then staked, and a mould of earth thrown up to cover the union and 4 in. of the scion above it, so as to allow for the earth settling down. The two lower buds on the shoot should be covered with the soil. It is essential that the union should be kept protected from the drying effect of the air until the end of summer.

Fig. 4.—A vigorous two-year-old vine to be spur-pruned next year.

Fig. 5.—A rod and spur-pruned vine. Five years old.

Fig. 6.—A spur-pruned vine.

Fig. 7.—A spur-pruned vine.

Care After Planting

When the leaves on the two or three top buds of the shoot which was left on the vine have opened out, the earth is drawn away and the shoot cut down to one or two buds above the base bud, after which the earth is replaced over the vine. The soil should be kept in good tilth and free from weeds. One shoot only should be allowed to grow, and that secured to the stake, leaving room in the tie to allow the vine to develop. The tender growths of the young vines are very susceptible to fungous diseases, and should be sprayed with fungicide accordingly.

In the early summer, the soil should be drawn away from the unions, and roots formed on the scions, and suckers on the stocks should be cut away. The soil should then be replaced, to be removed finally when the summer heat is declining.

When vines are planted in rows, the rows should be spaced 6 ft. apart for hand-work, or 8 ft. to 10 ft. for horse or motor power, and a distance of from 8 ft. to 16 ft., according to the vigour of the variety, is left between the vines.

Table-grape vines are generally grown on a trellis, the bottom wire of which is 18 in. above the soil. Twelve inches above that wire are two horizontal wires, 18 in. apart, and, 18 in. above these two, another single wire. Vines can also be trained over pergolas or against a wall.

Another method is to grow a number of rods radiating from the main stem and to support them 2 ft. from the ground on forked sticks.

Selection of Varieties

In choosing suitable varieties to grow in a particular district, the consideration of the latitude is not so important as that of the altitude and aspect. For instance, it has been noticed that certain varieties ripen a fortnight earlier on favourable sites in Central Otago than on less favourable sites in the Wairarapa. In Te Kauwhata, where the principal table-grape grown is the Albany Surprise, there is a difference of from three weeks to a month in the ripening of this variety on sites with different aspects.

The vines of the first four periods mentioned below will ripen their grapes in the most southerly parts of the South Island if grown on sites protected from the south and exposed to the sun.

European Varieties

Selection of both European and American and American-European varieties of grapes for outdoor culture in the home garden or orchard are available from the Government Horticultural Station at Te Kauwhata. Varieties with the above ripening periods, suitable for the various climatic conditions in the Dominion, can be supplied on request, at a nominal cost.

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EUROPEAN VARIETIES FOR OUTDOOR CULTURE.

The following are the table-grape varieties recommended for outdoor culture in New Zealand:—

Precocious period. — Black: Gamay hatif des Vosges. White: Madeleine Alice Salomon.

Early period. — White: Precoce de Malingre, Agostenga.

Early first period.—Black: Portugais bleu. White: Madeleine Royale, Goldriesling blanc, Ferdinand de Lesseps.

First period.—White: Golden Chasselas, Lignan. Rose: Chasselas Rose, Chasselas Rose Royale.

Second period.—Black: Black Hamburg, Cinsaut. White: Gradiska Temprano, Muscat de Frontignan, Poulsart blanc, Palomino.

Third period.—Black: Black Alicante, Mrs. Pince's Muscat, Gros Maroc. White: Golden Queen, Blanc de Calabre, Muscat of Alexandria. Red: Red Hanepoot.

AMERICAN AND AMERICAN-EUROPEAN VARIETIES.

The pure American varieties and American-European hybrids, being more resistant to diseases, are especially suitable for North Auckland conditions, and as they require less care than the European varieties are very suitable for planting in the farmer's garden or orchard.

Owing to their aromatic flavours, the grapes they bear are not always appreciated by those used to the delicate flavours of the European grapes; but others prefer them, as indicated by the already large and increasing demand for the Albany Surprise on the Auckland market and for the Iona in Hawke's Bay.

Precocious period.—White: Baco 2-16 (Totmur), suitable for pergolas.

Early period. — Black: Campbell's Early, Worden. White: Diamond.

First period.—White: Seibel 2653, Seibel 4995, Seibel 5860, Gaillard Girerd 157.

Late first period.—Black: Seibel 4643, Seibel 5455.

Second period. — White: Niagara. Black: Albany Surprise, suitable for pergolas, Herbert, Concord. Red: Iona.

Ripening Periods

The "first" ripening period is that of the Golden Chasselas (*Chasselas dore de Fontainbleau*), which ripens in New Zealand about the end of February or the beginning of March, according to the altitude, aspect, and soil conditions of the vineyard. The "precocious" varieties ripen their fruit from two to three weeks before the Golden Chasselas; "early" varieties between the "precocious" and "first" period varieties; "second" and "third" periods approximately two and four weeks later respectively than the Golden Chasselas.

A selection of stock cuttings suitable for the various types of soil in the Phylloxera-infested areas of North Auckland is also available at Te Kauwhata. Advice as to their affinity for scion varieties and their adaptation to the different soils will be supplied on application to the Vine and Wine Instructor, Te Kauwhata.

Radio Broadcasts

RADIO talks to farmers will be given from station 1YA, Auckland, at 7.15 p.m., on the following dates:—

April 3.—"Colic in Horses," by Mr. H. W. Carbury, M.R.C.V.S., Veterinarian, Department of Agriculture, Auckland.

April 10 (Easter Monday).—No talk arranged.

April 17.—"Field work for the Coming Month," by Mr. P. S. Syme, Instructor in Agriculture, Department of Agriculture, Warkworth.

April 24.—"Young Farmers' Clubs' Session," by Mr. W. Alexander, Advisory member, Auckland Provincial Y.F.C. Council.

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Veterinary Notes for the Farmer

Disease of the Lymphatic Glands in Sheep

A sheep disease often called pseudo (meaning false) tuberculosis, although present to only a limited extent in New Zealand, shows indications of spreading, and it is necessary for sheep farmers to take all known precautions to prevent this spreading.

IT IS evidently very widely spread in Australia, Argentina, Uruguay and South Africa and on this account certain restrictions are imposed on mutton imported into the United Kingdom.

Veterinarians know the disease as *Caseous lymphadenitis*. Sometimes it is referred to as *Caseous nodules*, and there is also the third appellation, "pseudo - tuberculosis," already mentioned.

The term "pseudo-tuberculosis" has been given on account of the great similarity in appearance of the complaint to tuberculosis in other species of stock, but beyond the general appearance and situation of the lesions there is nothing in common between the two diseases. It will be well to bear in mind that under natural conditions sheep are not subject to tuberculosis, and, as far as the writer knows, there have only been two authenticated cases of tuberculosis in sheep in New Zealand.

Glandular Lesions

The disease now under notice, *Caseous lymphadenitis*, is, under natural conditions, confined solely to sheep and lambs, and is characterised by enlargement of the lymphatic glands of the body. The lesion in the gland consists of a localized inflammation, followed by suppuration, with encapsuled nodule formation, the contents of which consist of a greenish-coloured pus at first, which later on, is converted into a cheesy-looking material.

The disease is caused by a specific organism, *Corynebacterium pseudotuberculosis* or *Preisz-Nocard bacillus*, which is fairly resistant to drying. If the weather conditions are favourable, it may remain viable for many months, but can be easily destroyed by disinfectants.

Lymphadenitis may be found in lambs and hoggets, though wethers and aged ewes are most commonly affected. Merino and merino cross sheep seem to suffer from it more than other breeds. On account of the fairly large percentage of sheep found affected, and rejected for export, it is a matter of the utmost importance that sheep farmers should take every possible precaution to prevent the spread of the disease.

Method of Infection

With regard to the method of infection, there is very little evidence to show that it takes place through ingestion, either of contaminated food or water, except that the disease is more often seen in old sheep, and more especially, old ewes and broken-mouth sheep. Some observers think that the organism gains access through the gums whilst grazing.

Others (among them myself) consider it more likely that infection takes place through wounds accidentally received during shearing, crutching, castrating and docking, or through the umbilical cord at birth or shortly afterwards, and even through dog bites. This view is borne out by experiments at the Veterinary Laboratory, at Wallaceville, where the disease has been set up by the experimental inoculation of wounds.

Symptoms are non-existent as a rule, and early treatment cannot be applied, but I suggest that if palpation of the glands were done at shearing time, a large number of cases of the disease could be discovered. Affected sheep could then be segregated from the rest of the flock.

Preventive Measures

As far as treatment is concerned, I do not think that much can be done when the disease has established itself, but no doubt a lot could be done to prevent the spread of the disease by attending to strict cleanliness at all times during the operations of shearing, dagging, docking, castrating, etc., and the thorough disinfecting of all wounds caused during these activities.

If the farm is known to be infected, the holding paddocks, shearing pens and implements should be thoroughly disinfected from time to time. It would also be as well to saturate the soil of the holding yards with, say, one part of non-poisonous dip to 20 parts of water, or to thorougnly dress the soil with quick-lime and after a few days turn it over.

In addition it may be expedient to plough up and cultivate nearby paddocks and to resow at three-year intervals. I am sure that if these precautions were taken, they would go a long way towards the elimination of the disease in this country.

—C. S. ELPHICK, M.R.C.V.S., Veterinarian, Palmerston North.

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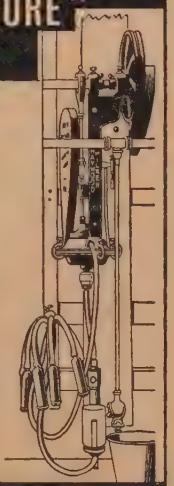

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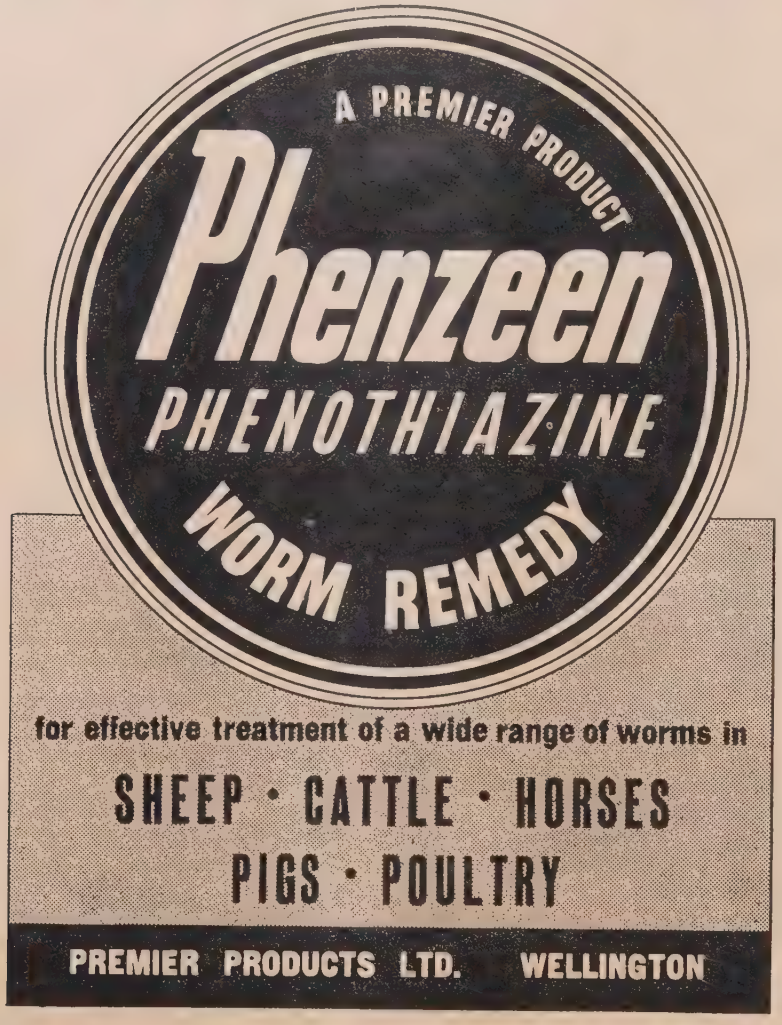

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In drenching sheep, however, owing to its relatively high cost, PHENZEEN should be used only for special purposes such as the "tail" of the flock, stud sheep, or for fat lambs on heavily worm-infested country.

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Answers to Correspondents

Lame Cow

"S.W." (Tauranga):—

"I have a cow that walks with her head down and her back hunched. She appears to be lame in her front feet, but I cannot detect anything wrong with her legs or feet. My opinion is that something is wrong in her brisket, although I cannot see anything swollen, and there is no soreness on the outside. She lies down quite a lot, and when she rises she kneels on her front legs for about five minutes before getting on her feet, and then is inclined to stagger a bit when walking right away, but only in her front legs. She is quite normal otherwise, but has been like this for about three months."

LIVESTOCK DIVISION:—

It is not an easy matter to diagnose the nature of the lameness without an examination of the animal. If the animal is a good producer, the history suggests that your cow may be suffering from lack of minerals, particularly lime salts. It is suggested that a mineral lick, consisting of equal parts of coarse salt and sterilised bone-flour be mixed and made available to the cow at all times. If this mineral deficiency is the cause of the symptoms, quicker results would be obtained through giving a small daily allowance of bran or other feed, in which

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a few ounces of the mineral mixture is mixed.

You do not state whether other cows have shown any symptoms of a similar nature, or the amount of, or need for, topdressing of the pasture on which the animal is grazing. The solution to the prevention of a similar case arising lies in the line of topdressing as soon as fertiliser becomes available. Should this diagnosis not prove the correct one, it is suggested that you have the animal examined by a veterinary surgeon.

Discharge From Cow

"C.A.McA." (Ashburton) :—

"If a cow in season is discharging a thick, cloudy and yellowish matter, what does that indicate, and what should be done, if anything, to remedy it? Should such a cow be allowed to the bull? Does it hinder conception or not to allow cows, after service, back to the herd, to play about with each other? Is it necessary or desirable to wash out the bull after each service?"

LIVESTOCK DIVISION:—

A cow in season should not have a discharge such as you mention. Anything of this nature is generally caused by some disease such as vaginitis or leucorrhoea, and should receive treatment by injections of weak Condy's solution or Lugols solution and water 2 per cent. strength, twice weekly. A cow with an unhealthy discharge should not be allowed service.

It is not necessary to wash out the bull after each service, provided the cows are clean. Isolation after service is not done by the average farmer.

Advisory Service on Veterinary Matters.

Farmers are invited to submit inquiries connected with the health of their stock, and the replies will be published under this heading.

Calves Going Off In Autumn

"D.G.B." (Feilding):—

"My calves do well until about April or May, when they go to pieces and then are a problem to winter. At present they are fed meal after the skim milk, and this year I intend to continue feeding the meal until they are over 12 months old. Do you think this a good practice?"

LIVESTOCK DIVISION:—

The most probable cause of the calves going off in the autumn would be internal parasites (stomach and intestinal worms). Calves are better weaned on to the driest, sunniest available paddocks, preferably those which have not had young stock in them for 12 months. Feeding is important, so by all means continue with the meal during autumn and winter. You might also try drenching them once a month with about 4-5 ounces (depending on age, and starting with the smaller amount) of a mixture of 2 ounces bluestone and 1 ounce of 40% nicotine sulphate per gallon of water. A bonemeal-salt lick should be available for young stock.

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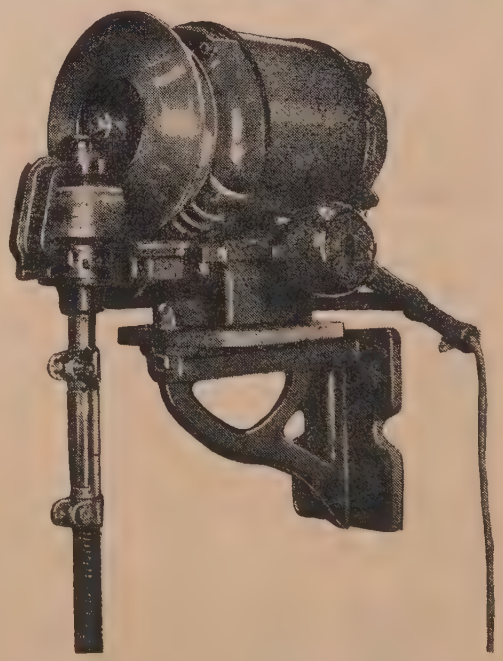

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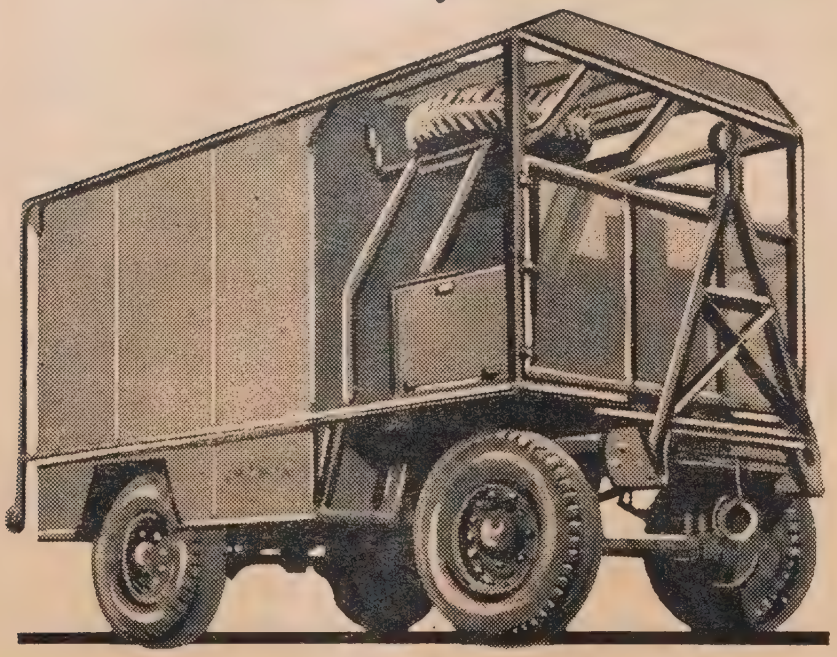

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Pasture Establishment

March is generally conceded to be the best time of the year to sow down new pastures in many parts of New Zealand. From March onwards, the soil, as a rule, maintains a sufficient quantity of moisture to germinate the seed and supply the young seedling with its full requirements, and there is sufficient warmth in the soil for germination and rapid growth, so that the pasture is on its feet before winter sets in.

BY SOWING time the seed bed should be thoroughly prepared to receive the seed. Nature, as a rule, relies for the regeneration of each species on a heavy production of seed from each plant. Only an extremely small proportion of this seed germinates and lives to become mature plants. Man, by cultivation of the ground, not only achieves considerable economy in seed but obtains substantially better plant establishment.

By cultivation, the seed can be **buried** in the soil, thus securing a more even and better supply of moisture after rainfall, and enabling the roots of the seedling to establish speedy contact with the soil particles from which the seedling must obtain its moisture and food supply in order to live. If soil is too lumpy and large, spaces occur in the soil, and the young seedling will suffer or die, because its roots are not in intimate contact with the soil particles. Therefore, so that this cannot occur, the soil must be made **fine** and **firm**, and the smaller the seed to be sown, the finer and firmer it must be. Grass and clover seeds are small, hence a **fine** and **firm** seed bed is of major importance.

Importance of Clovers

Clover plants upon which the successful establishment of the young pasture is dependent are most particular concerning the condition of the seed bed. The failure or partial failure of young pastures can often be attributed to poor establishment of clovers through lack of firmness in the seed bed. Consequent on a poor stand of clovers, the grasses are unthrifty in appearance, make poor growth, and permit the introduction of inferior plants which may subsequently dominate the pasture.

After cropping the farmer need only concern himself in getting the soil at the time of sowing in the right physical condition. However, in breaking in virgin soils or worn out pasture lands, particularly where the soil is heavy in texture, a long period of fallow is necessary to make the soil mellow.

On such heavy soils, deep ploughing should be carried out early in the winter and the soil left to weather throughout the winter. As soon as the soil is dry enough in the spring, cultivation with discs and harrows should be carried out, followed by ploughing and working with discs, cultivators and, latterly, harrows, till the soil is fine enough, by which time it will have settled down to a firm condition.

The seed can be broadcast on a rolled surface and afterwards harrowed to cover. On light soils, failures are most frequently caused by poor consolidation. The consolidation must be secured from the start. After ploughing, the roller is run over the furrows to flatten them out and to close the spaces occurring beneath. The fining of the soil is carried out by discs and harrows, and a rolling before and after sowing is advisable.

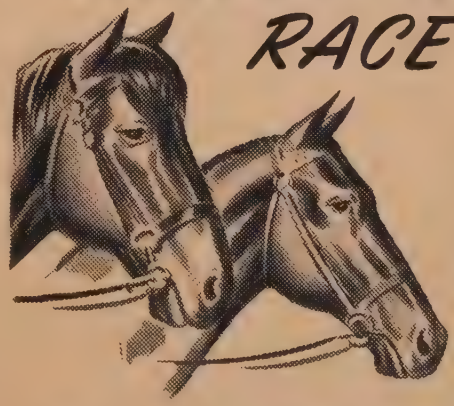
Deep Cultivation

In some districts, an attempt was made to avoid the cost involved in ploughing virgin land by what was called surface cultivation. This consisted of scratching the soil with harrows or discs. The results were frequently unsatisfactory, and it was found that deeper cultivating implements were required.

This position was met by the introduction of the rotary hoe, and latterly by the use of larger disc harrows, with discs 24 in. in diameter drawn by very powerful tractors. The latter machines in reality ploughed the soil about 4-5 inches deep, and although the work was more costly than that done by the lighter implements, it was still more cheaply performed than with the ordinary plough.

The shallow cultivation which was first tried proved defective, in that weeds and surface growth were not killed, and their extermination in the young growing pastures proved both costly and difficult, and at times impracticable. Particularly on heavy virgin soils, pastures did not establish properly, because only the top inch or two was subject to aeration, and that only for a short period.

DRAUGHT-HORSE or RACE-HORSE



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Before any cultivation is attempted on virgin soils, all scrub and fern of any size should be cut and burnt. If it is not, it will cause much difficulty during cultivation and may render proper consolidation impossible, so that a successful pasture establishment may not be achieved.

Seeding

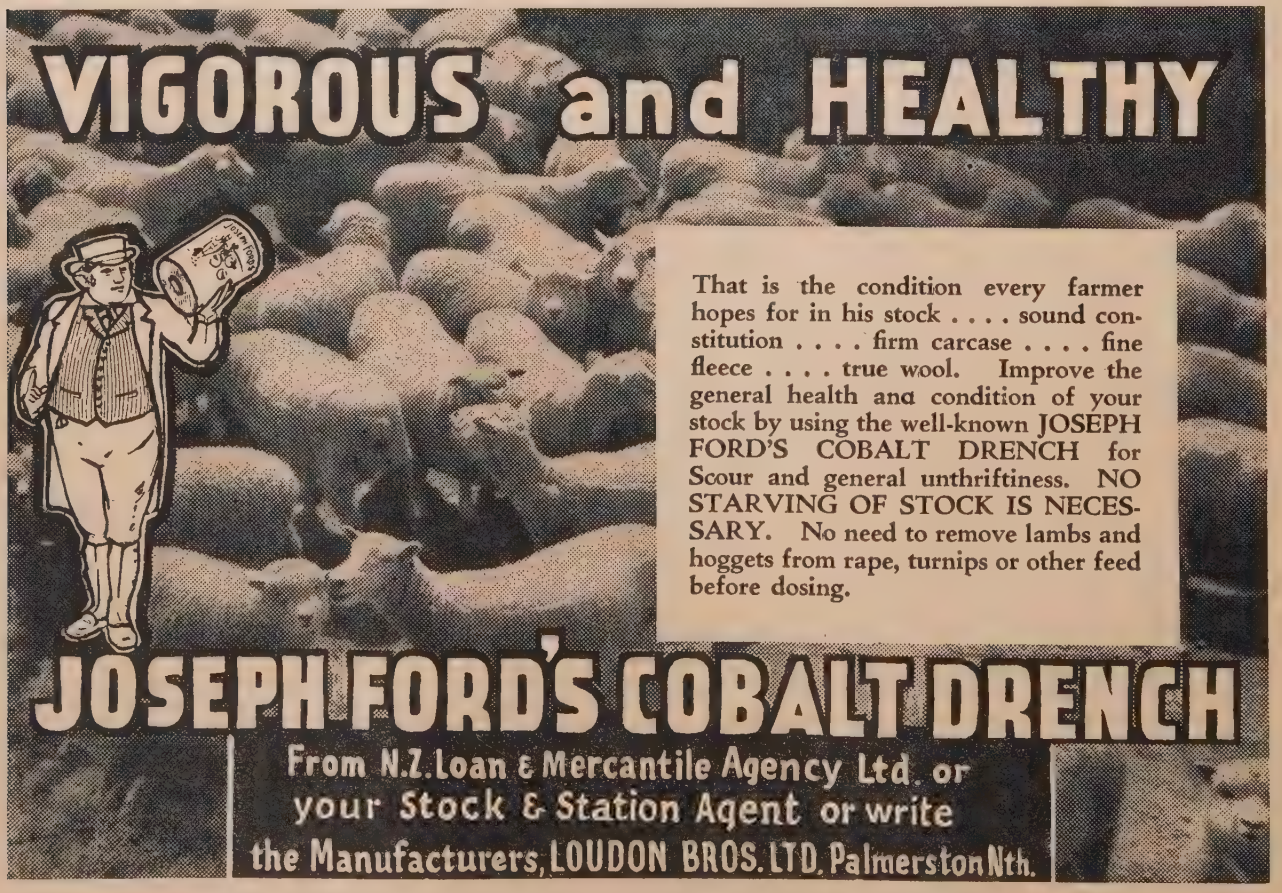
Sowing should take place at a time which will not result in the young seedling being subject to drought or excessive cold, or cold and wet conditions. Sowing in February or March is best, for spring sowings usually subject the young plants to a period of dry conditions in the following summer. Only in cold climates should consideration be given to spring sowings, and these are most successful where very dry weather is not normally experienced in the summer. For particular information in regard to time of sowing the farmer should consult the local Instructor in Agriculture, who will also advise him more definitely on kinds of seeds and other matters relating to pasture establishment on his soils.

In pasture establishment, time is the essence of the contract. It behoves the farmer to arrange for his land to be prepared well in advance of sowing-time, but should it not be prepared then, it is better to sow a month later than the optimum time on a well-prepared seed bed than on time on an ill-prepared one.

Roll before sowing.

The seed is best sown broadcast and covered with light tine or chain harrows, followed by a roller on light soils. The fertilizer is best sown separately from the seed, especially if a quick-acting fertilizer is being used.

The seed mixture to be sown is dependent on many factors—the soil, the climate, and the kind of management and type of stock.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Clovers will not establish in a loose seed bed.

The aim is to establish the most highly productive pasture for each set of conditions.

SEEDING UNDER MOIST CLIMATIC CONDITIONS.

Where there is an ample supply of moisture throughout the year, a pasture dominantly ryegrass, with white clover, is the most highly productive one which can be established. Such areas are extremely limited, and where a period of dryness occurs, deeper rooted pasture plants, such as cocksfoot and paspalum, should be included. Here again, the type of management affects the position, and on fields subject to continuous heavy grazing by sheep, cocksfoot may not establish and grow sufficient fodder to warrant its inclusion in the mixture.

On dairy and cattle farms, the following mixture will suit most soil conditions:—

Certified perennial ryegrass	**20 lb.**
„ cocksfoot	**10 lb.**
„ white clover	**2 lb.**
N.Z. broad red clover	**3 lb.**
Per acre	**35 lb.**

Where paspalum thrives, sow 6 lb. of this highly productive summer and autumn grass and 4 lb. of cocksfoot, the latter to provide summer feed while the former is establishing. On the less fertile areas, there may be reason for including 1lb. Lotus major and 2lb. crested dogstail. On moist soils, especially in colder climates, Timothy 4 lb., when the seed is available, should replace some of the cocksfoot seed in the mixture.

For fat-lamb farms of the North Island, the same mixture would be suitable, but may be considerably improved by the inclusion of 2 lb. crested dogstail and 2lb. subterranean clover, except in the most fertile areas. Where cattle are not also carried, the cocksfoot, paspalum and Timothy sowings may be reduced or omitted.

On dairy farms where fertility of the soil is not of a high standard, and where subterranean clover does not cause much bloat in the cattle, or much taint in the milk, this clover can be included with advantage.

On soils where red clover is liable to take charge, it should be sown at 2 lb. instead of 3 lb. Red clover is useful in making a quick, vigorous cover over the soil during the first two or three summers, improving the fertility, preventing baking of the soil surface and providing summer feed. Where red clover is liable to persist, broad red should be replaced by Montgomery red clover, which is more permanent, though not so prolific in its early life.

Key Plant

The key plant in all the above mixtures is undoubtedly white clover. Clovers supply the major portion of the nitrogen requirements of a pasture, and, of the clovers, white clover is the highest-producing, permanent plant. It maintains throughout the year its quota of production, both of foliage for feeding stock, and, what is more important, nitrogen for the soil, better than any other clover.

However, some white clovers are not permanent or so highly productive, and, to ensure that such plants are not introduced, farmers should always sow certified white clover. The newly selected strains of white clover can be highly recommended, and farmers desiring the best should sow these.

SEEDING UNDER DRY CLIMATIC CONDITIONS.

I have now dealt with grass-seed mixtures for the moister soils and areas of reasonably high rainfall. Let us now turn to grass mixtures for drier areas where arable farming is practised. Here permanent grass is more difficult to establish, and in some areas most of the original species sown disappear in two or three years' time and the areas must be reploughed. In such areas, pastures lasting one or two years may be sown, consisting of:—

Certified Italian ryegrass	**25 lb.**
Broad red clover	**5 lb.**
Per acre	**30 lb.**

If the pasture is required to last longer than this, more permanent species should be sown as follows:—

Certified perennial ryegrass	**20 lb.**
„ cocksfoot	**6 lb.**
„ white clover	**2 lb.**
Subterranean clover	**2 lb.**
Certified Montgomery red clover	**3 lb.**
Per acre	**33 lb.**

To be truly perennial under very dry conditions, such a pasture should receive suitable topdressing, and not be overgrazed at any time. If it is not well treated in these respects, it may not last much longer than a mixture of certified perennial ryegrass and broad red clover. Where grazing is expected to be severe in the first summer following establishment, cocksfoot should be omitted or reduced in quantity.

On very light and dry land the following mixture can be sown:

Certified perennial ryegrass	**10 lb.**
Subterranean clover	**3 lb.**
Certified white clover	**2 lb.**
„ Montgomery red clover	**3 lb.**
„ cocksfoot	**10 lb.**
Per acre	**28 lb.**

The cocksfoot should be omitted and the ryegrass increased to 15 lb. where the pasture is going to be grazed severely—a common experience and one often unavoidable in such districts.

In the very dry areas, red clover is probably the most important clover plant, for white clover often fails under extremely dry conditions.

General

In all mixtures lasting more than two years, you will note that Italian ryegrass does not feature. It should not be included where it is liable to take charge and suppress other species and where the land is liable to poach in the winter. It is of little advantage, except that it provides

extra feed in the first winter of the young pasture's life.

There are not many farmers who will sow species such as browntop, Chewings fescue, *poa pratensis* or yarrow on ploughed land which is to be topdressed, or where the soil is naturally fairly fertile, and there is no need to stress the waste and harm their sowing entails.

In ordering the seed, be sure to specify certified, particularly when purchasing white clover and ryegrass; also make certain that the purity and germination of all the seeds is of a high standard. The merchant selling certified seed should hold certificates showing the purity and germination of

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each line and bearing as proof the same purity and germination number as that on the tags on the bags of seed.

Best Strains

Up till recently, the certified perennial ryegrass on the market was derived from the best strains procurable from farmers' fields. These best strains have been subject to selection to produce an improved pedigree strain which has been on the market for a few years. It has been selected for increased production, and has already demonstrated its superiority in this respect. It is also more palatable.

Where perennial ryegrass seed production from an area may be contemplated, farmers should sow seed certified in either the "Pedigree" or the "Mother" class. Where the pasture is for grazing purposes only, certified "permanent pasture" seed may be sown, or "Mother" seed if the farmer desires to be assured of obtaining seed of the improved strain.

Of general interest at the present time is the development of an entirely new type of ryegrass, intermediate in character between permanent and Italian ryegrass. The type is at present designated "H.1" ryegrass, and though not yet available in large quantities, is being sown for production of seed. In the meantime, its value for different types of farming is being tested. It was intended primarily for use in short rotation pastures, but experience so far has shown that under certain circumstances it promises greater persistency, and its use may, therefore, be more widespread than was at first anticipated.

Manurial Treatment

The fertilizer used in sowing down should be applied at the time of sowing, and, if possible, separate from the seed. Lime should be applied shortly after the ground has been worked down after the last ploughing or deep cultivation. Owing to the war, the quantity and kind of fertilizer that can be applied is restricted to a very considerable extent. In view of this and the need to treat young pastures as well as possible, it will pay to reduce the quantity applied to older pastures so that the new pasture can obtain a reasonable supply.

SURFACE SOWING ON BURNS.

When New Zealand was being settled, there were large areas of bush which were grassed quickly by the pioneers in a novel way. They cut the smaller trees and scrub, burnt them and sowed the grass mixture on the ashes of the fire. The pastures grew amazingly well for a few years after this method of establishment, since when they have deteriorated, and on poor soils, to such an extent that second growth (tea tree and fern) have crept in.

The regrassing of these deteriorated areas presents considerable difficulties. Sowings should take place in time to catch the autumn rains, and the second growth or bush should be cut in the spring, so that the material will be in a good condition for burning in the autumn.

The seeds mixture for burns varies according to the ash covering and the type of management which is to follow. On the old bush burns, the seed mixture for ploughed and cultivated land at reduced rates per acre would not have been unsuitable, provided that the soil was fertile, or its fertility was to be maintained by topdressing. Where topdressing may not be carried out, paspalum should not be sown, and the hardier species browntop and *danthonia pilosa* each at 2 lb. per acre should be included.

On secondary burns there is less ash and, therefore, a poorer seed bed, and where the amount of ash is not thick, cocksfoot fails, and should be omitted. On dry soils which are not going to be topdressed but merely left to deteriorate and be reburnt from time to time, *danthonia pilosa* should be sown at 4 lb. per acre, unless sufficient *danthonia* is already present for rapid re-establishment. On secondary burns where the soil and climatic conditions are moist, and particularly where an attempt will be made to maintain the area by topdressing, clovers should be included, the mixture for such conditions being somewhat as follows:—

Certified perennial ryegrass	**8 lb.**
Certified white clover	**2 lb.**
Lotus major	**1 lb.**
Subterranean clover	**2 lb.**
Crested dogstail	**3 lb.**
Browntop	**2 lb.**
Danthonia pilosa	**2 lb.**
Paspalum	**2 lb.**
Per acre	**22 lb.**

In drier areas and on sunny slopes, increase the danthonia to 3 lb. and add Chewings fescue 3 lb. and yarrow ¼ lb., and reduce the perennial ryegrass, crested dogstail and paspalum. In shady faces increase the browntop to 3 lb. per acre. Paspalum and subterranean clover are included only where climatic conditions are suitable for their growth.

On drier areas, and particularly where topdressing is not going to be carried out, paspalum should be omitted.

INTRODUCTION OF NEW SPECIES TO OLD PASTURES BY SURFACE SOWING.

Many acres of pasture land have been improved by introducing new and better species by surface sowing, with or without cultivation with harrows to make a seed bed. This method has been most successfully employed for the introduction of clover plants which are not present in the sward, followed by topdressing to encourage their growth and thus raise the fertility of the soil and production of higher yields of better quality pasture. Thus many acres of land in the East Coast of the North Island have been transformed from wool and store stock production to the raising of fat lambs by the introduction of subterranean clover and topdressing.

The success of such methods depends largely on the weather conditions after sowing and the kind of seed bed. If no cultivation is to be attempted, the pasture should not be grazed bare, but kept fairly long, so that after sowing the ground is kept moist by the shading effect of the herbage. If cultivation is to be attempted, the pasture should be grazed as bare as possible beforehand. Discs cannot be successfully employed unless the herbage is sparse when they can be usefully employed, and when assisted by harrows they will prepare a reasonably good seed bed.

Thick Grass Turf

Where there is a thick grass turf, cultivation will not prove very effective, and the only implements of any value in such circumstances are the more severe types of harrows. The more open the pasture and the lighter the soil texture the more successful will the surface cultivation be. If weather conditions are warm and moist for some time after sowing, the strike will result in a successful introduction of useful plants which may be multiplied in the pasture by increasing the fertility by topdressing.

The better the seed-bed the greater the gamble which can be taken with the amount of seed to be sown. Two or three pounds of the clover seed per acre can be sown where conditions are fairly suitable, but these sowings can be reduced to a few ounces where the chances are not so good. On some areas a good establishment of a clover has been attained by repeated annual sowings of only a few ounces. Where cultivation has produced a reasonably good seed-bed, it is advisable to sow up to 20 lb. per acre of a mixture containing both grass and clover seeds which require introduction.

—*J. E. BELL,*
Acting Land Utilisation Officer,
Wellington.

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Orchard Notes

Picking for Storage

ACTIVITIES during the next two or three months will be mainly confined to the harvesting and packing of the pip fruit crop. With the early varieties completed, attention will have to be given to the selection and handling of fruit for long term cool storage.

All fruit intended for cool storage should be picked at the correct stage of maturity, as this has a very decided influence on the length of time it will keep. Fruit picked at the immature stage may keep longer, but it tends to shrivel and rarely attains perfection of colour, texture or flavour. On the other hand, if apples are allowed to remain upon the tree until their characteristic aroma is present and the skin begins to pale towards yellow, their life in storage will be relatively short. A stage between these two extremes should be aimed at.

Only Sound Fruit

In the selection of fruit for cool storage purposes, every care should be taken to see that only fruit of good quality is packed. All fruit should be free from disease and in a sound condition. Unsound fruit should be eliminated at time of packing. Fruits from lightly-laden trees, young grafts and young trees, which are generally large in size and of soft texture, will not keep and should not be included for cool storage.

Undue delay in getting the fruit into storage after it has been harvested is a very important factor. With the exception of the varieties Granny Smith and Ballarat, which are subject to storage-scald, and will improve in condition for long storage if they are held for a couple of weeks in open orchard cases in a cool place, all fruit should be placed in cool storage with a minimum of delay after it has been harvested.

Hygienic Packing

The greatest care should be taken throughout in the handling of fruit, for bruises and damage not only accelerate ripening and thus reduce the storage life, but also render the fruit more liable to fungal infection. Packing shed conditions should be perfectly hygienic. No reject, rotting and diseased fruit should be allowed to remain in or near the packing shed, otherwise the packed fruit is likely to become attacked by spores emanating from rots in the reject fruit.

Second-hand packing cases should be treated by dipping them in a sterilisation liquid, such as formalin solution (3 per cent.) or bluestone (1 lb. to 50 gallons of water).

The spraying season is now practically concluded. In districts where high temperatures prevail. Codling moth and Leaf-roller caterpillar are active at this period and it is advisable to apply an arsenate of lead spray, 1½ to 100, for their control.

Silver Leaf

Silver-leaf (*Stereum purpureum*) probably causes as great a loss in stone-fruit orchards as any other disease, with the possible exception of brown-rot.

Silver-leaf is a disease caused by a fungus (*Stereum purpureum*) which attacks the branches, trunks, and roots of pome and stone fruit trees and numerous ornamental and forest trees and shrubs. Usually, in the beginning, the disease is confined to a single branch or twig of the tree, causing the leaves to assume a silvery hue approaching the colour of lead. The branch showing this effect generally dies, and from year to year other branches become affected, until the whole tree is involved.

The silvering of the leaves is said to be due to the secretion of toxins by the fungus in the stem. On the dead limbs and trees, the fruiting bodies of the fungus appear. The fructifications appear in two forms, either as flattened incrustations up to several inches in length or bracket-shaped projections from about ¼ inch to 1 inch in width, arranged in tiers one above the other on the dead bark. This bracket fungus may be distinguished by the fact that the inner spore-bearing surface of hymenium is always quite smooth and of a lilac to purple colour. Where leaf silvering due to the fungus occurs, a brownish discoloration of the wood towards the base of the branch is always found.

Due to Wounds

Stereum purpureum is a wound parasite and can cause infection only through wounds due to pruning, bruising the bark of limbs, and breaking off of branches. Trees affected with this fungus do not always die; young and vigorous trees may exclude the fungus by the formation of an impenetrable gum barrier around the invaded tissues.

Unfortunately, the usual measure of fruit disease control by spraying does not apply to silver-leaf, therefore the following preventive treatment should be carried out:—

1.—Remove and burn, during the summer, all branches and stumps showing signs of silver-leaf, meaning not only dead branches actually on the trees but all dead wood lying about the orchard. By the cutting-out of dead branches during the summer months, the risk of infection through wounds thereby made is reduced to a minimum, as the spores of the fungus are then least abundant. It is exceedingly difficult for the fungus to cause infection at that period.

2.—In the early stages, when the silvering is confined to a few branches, the disease may be controlled by cutting these out early in the summer.

Care must be exercised to cut back well beyond the limit of the discoloured wood, otherwise the operation will have been useless.

Young and vigorous trees not showing marked dying-back may recover if attention is given when necessary to soil drainage and if, for several years, a balanced manurial programme, that includes adequate phosphate and potash, is carried out.

3.—All exposed surfaces should be smoothly trimmed with a sharp knife. This will promote more rapid healing and give more resistance to the lodgment of fungus spores. The wounds should then be protected, as soon as possible, by covering either with a bitumen emulsion or crude petroleum jelly. Wound dressings should be renewed annually or until the wounds callus over.

—A. T. DOUGLAS,
Acting District Supervisor,
Horticulture Division.

Orchard Diseases

FULL information on the subject of sprays for the control of orchard diseases and pests is available in a **free** bulletin (No. 161) obtainable from the Department of Agriculture at Auckland, Wellington, Christchurch and Dunedin.

Picking the Lemon Crop

LEMONS of the new season's crop will now be maturing, and picking will occupy an increasingly greater part of the growers' time. At the beginning of the season, in many orchards, the proportion of green lemons at each picking will be higher than at other times, necessitating greater care in the selection of the fruits to be clipped.

The darker-green lemons are better left for a few weeks, even though they may be up to picking size. Coarse and rough-looking lemons, of a dark-green colour, may improve before reaching peel size, but some will not be smooth enough to get into first grade before they become too large. The latter type can be left to colour and size up for peel grade. Mature dark-green lemons can be cured satisfactorily, but they require a very long curing period, which involves separation into a special class at grading.

Marketing

These extra operations, combined with considerable shrinkage during curing, add to working expenses and increase average handling costs. Lemons of medium or light-green, silver-green, or light-lemon colours, which have reached 2¼ inches in diameter, comprise the group most desirable for marketing. Those which have passed the light-yellow stage may become tree-ripe before the next pick. Therefore they should be clipped, even if somewhat under 2¼ in., for tree-ripe fruit is suitable only for juice grade.

It is best to use a slightly larger guide-ring for picking in orchards where lemons with a tendency towards the darker-green shades predominate. Lemons from these orchards take rather longer to cure to an attractive colour, with the result that shrinkage is appreciably greater before they are packed, and a larger percentage may come down below preferred counts if picked to standard size.

Handling Fruit

Special care must be exercised in handling new season lemons; not that growers should relax in this respect at any time, but because young fresh lemons are decidedly more susceptible to injury from rough treatment. The outer skin surface of a young lemon is more tender and less pliable than that of an older fruit. Even slight bumps and scratches readily injure the surface tissues, and the way is laid open for entry of organisms causing mould and decay. This liability to injury is most pronounced when harvesting has to be continued after a rainy spell, when the tissues of the lemons are in a particularly turgid condition.

To minimise injuries, picking bags and field boxes should be kept free of dirt, bits of twigs and other projections. Picking bags should not be overfilled, especially when on ladder work; and they should be emptied gently. Over-filling of field boxes should be avoided, as otherwise the top lemons are likely to be damaged and will require to be degraded on the sorting table, if noticed there, or, if they get past the graders blue-mould will develop. Do not transport lemons until 24 hours or more after picking, if this is avoidable, to give them some chance of toughening up.

Budding and Pruning

Budding should not be continued after early autumn. Even if conditions should be right at the time of working, the chances are against success of late buds. Wet, cold weather is unfavourable to good growth and, therefore, to sound unions of stocks and scions.

Discontinue pruning, except essential removals of dead or diseased wood. Heavy cutting can induce a flush of young growth, undesirable because it cannot harden up enough to withstand the effects of possible severe winter conditions. New growth lost through frost represents tree energy wasted.

Spraying

Oil sprays for control of red scale should not be further delayed if they are to be effective. Most of the young scales will have hatched and their resistance to treatment increases as they grow older. A special late oil spray may be required for white wax scale but, as suggested in earlier notes, this should not be applied until the last week in April—too late for the most effective control of red scale.

Fertilisers

The autumn application of fertiliser should be distributed during April. Avoid using mixtures having a high nitrogen content, likely to force growth during the winter or in a chance warm period before the cold months are over.

Quantities of fertilisers are necessarily likely to be limited. If total quantities have to be below normal for the orchard, it is recommended that the full quotas be maintained for trees making poor growth, and those on the poorer soil in the orchard, or for any trees carrying a particularly heavy crop.

Normally healthy trees, carrying not more than average crops, are the ones best able to carry on for a season or more on a reduced ration. Nevertheless, it would be unwise to try to maintain really poor trees at the expense of good ones.

Fertilisers should not be placed closer than 18 inches from the trunks of trees. Distribution should be even and within a radius of four to six feet from the trunks of younger trees, with the radius increasing until, for full grown trees, the application is spread over all or most of the land between the trees. The feeding roots of older trees, planted at normal distances apart, reach well beyond the middles of the rows. Manures applied only close to the bases of the trees cannot be reached by all the roots, while roots near the trees may not be able to absorb all the material concentrated within their reach.

—I. L. NOTTAGE,
Orchard Instructor,
Tauranga.

SEASONAL WORK

Prepare land for autumn sowing of cover crops.

Scale sprays should be applied if they are not already on.

Prepare for autumn distribution of fertilisers.

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Guide for the Home Garden

Tasks That Bring Rewards

THE much-heralded and greatest display of vegetables which has ever taken place in the Dominion was successfully staged at the Wellington Town Hall on February 9, 10 and 11 by the members of the Wellington Junior Chamber of Commerce, in association with the Wellington and Hutt Valley Horticultural Societies.

Despite the vagaries of the recent growing season, the quality and variety of the produce displayed was of a very high standard, and the exhibition well merited the patronage it received. Home-gardeners who visited it must surely have been inspired to further effort to produce to the limit of the capacity of their garden the vegetables necessary for their own requirements.

Viewed from any aspect, the exhibition was an outstanding success and must have achieved the object for which it was undertaken.

Saving Fertilisers

Indications are that fertilisers which have to be obtained from overseas may be in short supply during the coming growing season. It therefore becomes more than ever necessary not only to conserve whatever supplies one may have, but to make provision in the garden plan for growing green manure crops. As the main nitrogenous fertilisers are likely to be affected, consideration should be given to leguminous varieties for digging in.

Plants of this family are capable of storing nitrogen in their roots which, when the crop is harvested, contribute largely to the supply of this fertiliser in the soil. As a valuable leguminous green manure crop, lupins are highly popular, and seed may be sown in any vacant part of the garden. In addition, where a vegetable crop is growing that can be conveniently removed, such as carrots, swedes or beetroot, this may be done and the area sown to lupins.

Potash reserves may be built up by conserving all wood ashes from fires, indoors or in the open. These, however, should on no account be allowed to become wet, but stored where they will not be exposed to moist conditions.

Animals and poultry voidings should be carefully gathered and placed under cover. Ten per cent. superphosphate added to and mixed with fowl manure will protect its nitrogen content against escape. If serpentine superphosphate is used, a little more than the above quantity should be mixed with the manure.

Lime

Any part of the garden which has not recently received an application of lime should be dressed after digging and before seed of the green crop is sown. Two ounces to the square yard will be sufficient at present, and an equal quantity during spring. This later application should not be made where potatoes are to be planted.

Through chemical reactions brought about by the application of lime to the soil, valuable plant food which may have become more or less "fixed" will be released, thereby providing fertilisers which will benefit following crops.

Tomatoes

During April, and particularly towards the latter end of the month, the tomato vines will be showing signs of exhaustion and the remaining fruits hanging mostly green. If these are in a mature condition they should be picked and placed in a position where they will not be subjected to very low temperatures. On the benches of a small glasshouse is an excellent place. Inside a dwelling, if convenient, is quite suitable.

Wherever they may be stored, they should not be packed 3 and 4 deep in containers. Cold night temperatures will cause them to "sweat" with condensation, and in this condition they are most likely to develop disease and rot. The fruits are best laid out on a flat surface without touching each other, preferably on some straw.

While the tomatoes are on the vine, the blossom end should be watched for signs of change of colour, and, when this takes place the fruit is better removed and kept in the kitchen or other suitable place in the house. To prevent the development of late blight, the plants should be kept sprayed until all the fruits are removed.

Don'ts

Don't be satisfied that the garden soil contains sufficient organic matter. When it can be grown, a green manure crop is almost certain to be beneficial.

Don't select any old tuber specimen as good enough seed for your next potato crop. Whole seed of good shape about the size of a hen's egg, and free from disease, should be used.

Don't grumble because of the work the vegetable garden requires. Just consider how fortunate one is and what a pleasure it is to have the opportunity to grow some vegetables, undisturbed by enemy action.

Don't sow seeds or set plants just anywhere. Make and follow a garden plan. More economical and satisfactory production will result.

Kumaras

In April this crop will have reached maturity, and where there is a danger of frosts precautions should be taken to remove the tubers before they become damaged. In doing this the tops should be first cut and cleared away so that digging may proceed uninterrupted. A broad-tined fork should be used, and the tubers handled as carefully as fruit.

When digging is completed, the crop may be gathered in small heaps, exposed during the day and covered at night. This should be done for several days before storing, for which only sound specimens are selected. Damaged or badly misshapen tubers can be used as convenient.

Gourds

Marrows, pumpkins and all fruits of these varieties are frost-tender, and during April will require to be harvested. To be in best condition for storage, the vines should have completely died down with no traces of green, sappy growth remaining. Commercial growers can tell the condition of a gourd by a rap with the knuckles. The condition of maturity can, however, be best judged by pressing the rind with the thumb nail. If resistance to pressure is such that penetration is not possible, it may be taken for granted that the specimen is properly matured and fit for storage.

A well-ventilated shed is a good place in which to store gourds; but on boards set under trees in a position where frost will not affect them they will keep as well as in any other place. They should not be put up in piles. It is not advisable to place them more than two deep.

Spring Cabbages

Late March or early April is the appropriate time for setting out the plants. If the soil in the garden is shallow, or badly drained, a raised bed

should be made up on which to grow the crop.

After digging the necessary area, blood and bone manure and superphosphate, 2 parts of the former to 1 part of the latter, should be applied at the rate of 6 oz. per square yard and worked into the soil. Rows are made 12 inches apart, and if the same marker is dragged across the rows the plants can be set where the lines intersect.

This will allow 12 inches each way between the plants, some of which, when cut before being properly hearted, will allow space for the remaining plants to grow to maturity. After digging and before planting, a dressing of agricultural lime, ¼ lb. per square yard, will assist in maintaining the soil in a non-acid condition. This crop is worth an effort to produce, as it is the earliest cabbage available in spring.

Chives

To eke out the supply of onions held in store, and which may at times be used for culinary purposes, chives can at all times be considered as suitable. The bulbs may be planted either in spring or autumn, and should be set 6 inches apart. If more than one row is desired, these can be spaced 9 to 12 inches apart.

The tops only are used, and, cut when young and tender, they are excellent for flavouring cooked foods. The plant can be grown in a fair-sized flower pot. If this is used, small stones should be placed at the bottom to the depth of about 1 inch. This will provide drainage for excess water.

Leeks

Plants should now be well grown and showing good top growth. During late March, and up till the time when real cold weather sets in, liquid manure should be regularly applied to stimulate development, if there appears to be any slowing down. All available soil between the rows can be used for "banking" the stems in order to blanch them higher up. This will give a larger part of the plant for edible purposes. This "banking," however, should be done before the plants reach maturity.

Swedes

Home-gardeners who have gone to the little trouble and labour to grow a good bed of this valuable winter vegetable, will be amply repaid by the assured returns. Recent investigation into the respective qualities of some vegetables has determined the swede to be one of our most valuable garden products.

If the plant foliage is being eaten by slugs or snails, dust with burnt or hydrated lime applied, particularly, during evening. Should caterpillar be causing damage, quite a lot of these, in a small bed, may be hand-picked; but the best remedy lies in spraying with arsenate of lead or nicotine sulphate, or a combination mixture containing both. For proper bulb development the top growth must be protected. Paranaph will protect the plants against attacks by aphides.

All members of the cabbage family at present in the garden should be specially looked after just now, and protected from the depredations of caterpillars of the white butterfly and diamond-backed moth. Spraying as recommended above for swedes will be effective if properly carried out, as also will applications of derris dust. It is, however, of the utmost importance that the centre growth of the plants should be specially attended to, as, once the pests attack and seriously injure this part of the plant, maturity of good, attractive vegetables will not be possible.

The soil between and around the plants should be kept clear of weeds and well stirred by shallow hoeing. In the taller growing varieties the soil may be pulled towards the plants in order to brace them against prevailing winds. The heavy top growth of kale and Brussels sprouts particularly will, through the action of high winds be inclined to unbalance the plant and break the rooting system, with consequent injury to growth during the remainder of the season.

—D. K. PRITCHARD,
Instructor in Vegetable Culture,
Wellington

Pig Industry Broadcasts

UNDER the auspices of the District Pig Councils concerned, broadcasts will be delivered in April as follows:—

Auckland, 1YA—April 20th, 7.15 p.m., "Whey Feeding," by Colin Wallace, Supervisor, Waikato District Pig Council.

Dunedin, 4YA—April 10, 7.15 p.m., "Autumn Feeding," by M. Roderique, Supervisor, Otago District Pig Council.

Napier, 2YH—April 13, 7.30 p.m., "Equipment that Makes Pig-keeping Easy," by I. H. Owtram, Supervisor, Tairawhiti District Pig Council.

Palmerston North, 2ZA—April 18, 8.30 p.m., "Housing and Sanitation," by L. Marsdon, Supervisor, Wellington District Pig Council.

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Seasonal Work for Beekeepers

Honey Production

MOST beekeepers will have completed final arrangements for wintering colonies, and an opportunity is now offered to review general methods of apiary practice. The production of section or comb honey is a subject that has not been given a great deal of prominence during recent years, perhaps as the result of the increase in the production of extracted honey depleting the ranks of beekeepers producing section honey.

There is room for improved methods in this branch of beekeeping. During the past season difficulty was experienced in purchasing certain essential equipment used in the production of section honey, but inconveniences such as this are only of a temporary nature, and with a return to more normal times ample equipment will be available.

Advantages

Raising section honey has several distinct advantages. Beekeepers whose apiaries are located in districts where the honey gathered by the bees is such that it will not readily leave the combs by ordinary methods of extracting, would be well advised to give consideration to running at least part of their hives for section honey, or most of their hives for part of the season.

There was a time when it was considered that only the finest honeys having the most delicate flavour should be offered for sale in sections, but the demand for honey in recent years has proved that the public are prepared to buy comb honey produced from any source of nectar, whether light or dark in colour, providing the flavour of the honey is not unpalatable. The maximum price at which a pound section may be sold direct to the consumer by the beekeeper is 1/6d. at the present time.

This is a most satisfactory return and although the yield per colony is generally less in sections than in extracted honey the cost of production is not so high, particularly in the case of the small producer. The expensive equipment required in extracted honey production, particularly extractors and tanks, is not necessary.

Disadvantages

There are some disadvantages in the production of section honey. The work is exacting and calls for a very thorough knowledge of bee behaviour. Also, constant manipulation of supers and brood is required to control swarming, and in order to get the sections completed, additional room by way of another super of sections should not be given the colony until the sections in the supers already on the hive are practically completed. Furthermore, a honey flow that would give a reasonable return where extracted honey production was being undertaken may be quite inadequate for a satisfactory return from hives run for section honey.

Unless a district has a fairly consistent honey flow that is both rapid and steady, it is not advisable to rely entirely on section honey production. There is always a considerable percentage of sections that the bees have not completed by the time the honey flow ceases, and these must be counted as a loss, although the bees can be induced to remove the honey from them later in the season and numbers can be used as bait sections, an important item of equipment the following season.

As the bees are very disinclined to start work on comb foundation in the sections, this can be considered a further disadvantage. Finally, the delicate nature of the product results in losses through breakage in transit, a hazard rarely encountered with the extracted article.

Equipment

The equipment used in the production of section honey in New Zealand is of standard design, but in overseas countries, supers, and sections of various dimensions are in use, as are patent designs in frames, bottom boards and numerous gadgets. Each style has some advantages but New Zealand beekeepers use only one kind, the beeway type of section.

The type of equipment, however, is not the essential point, provided it is well made, and close fitting. Section honey cannot be produced with poor equipment. Crop returns are governed by the ability of the beekeeper and his efficiency in manipulating his equipment and bees in conjunction with the existing conditions in his locality. There must be no shortage of supers if full advantage is to be taken of good seasons. Colonies must be hived in two-storey full-depth brood chambers up to the beginning of the honey flow, in order that the queens may have the necessary comb room to build up powerful colonies which at the beginning of the honey flow are reduced to a single brood chamber. In addition to the brood chambers each colony should be supplied with five half-depth supers, each containing seven frames with separators, holding four sections each, and one half-depth extracting frame.

Sections and Foundation

The assembling of the sections and fitting the foundations is tedious work, requiring care and attention. It is important that the sections be folded squarely, otherwise the finished article will be lopsided. Before the sections are folded, particularly in dry weather, they should be placed in containers on a concrete floor that has been previously dampened. The floor should be sprinkled with water from time to time and the boxes of sections frequently turned over.

Two to three days in this atmosphere is quite long enough to ensure the sections being sufficiently pliable for safe use. Any further exposure may cause the moisture to mildew the wood. For quick use the section V groove joints may be wiped with a small brush dipped in hot water to make them pliable.

Foundation for use in sections is known as thin super and the standard New Zealand article measures approximately 28 half-sheets to the pound. The thinner the mid-rib of a section the more palatable it is, and this can only be obtained by using the thinnest foundation available consistent with sufficient strength to hold the weight of bees employed in each section and to withstand the heat of the colony. The foundation must also be of pure beeswax and attractive to the bees, so that they will start to draw it out into comb with the minimum delay.

—R. S. WALSH,
Apiary Instructor,
Auckland.

(To be continued.)

Health of Poultry

TO recognise disease in the early stages and to know how to maintain the health of birds is essential to successful poultry keeping. The following **free bulletins** may be obobtained from the Department of Agriculture, Wellington, Auckland, Christchurch and Dunedin: "Internal Parasites in Poultry," "Coccidiosis in Poultry," and "Pullorum Disease, or Bacillary White Diarrhoea of Chicks."

Notes for the Poultry Farmer

Poultry-keeping as a Source of Income

(Continued.)

— By —

F. C. BOBBY,
Superintendent of Poultry Husbandry, Wellington

ASSUMING that a new farm has been built or that an established plant without stock is purchased, the next step is to build up a flock of birds. There are a number of ways in which this may be done, but irrespective of the method selected, initial or foundation stock should be of the highest standard obtainable, consistent with capital outlay. The utlimate success of the farm will depend to a marked degree upon the qualities, both laying and constitutional, of this foundation stock.

There is probably no "best" method of stocking a poultry-farm, since factors such as the previous experience of the owner, his ultimate object, and capital available must influence his choice in this regard. Irrespective of the method chosen the selection of a source of supply, whether hatching eggs, day-old chicks, or older birds, may easily prove to be a difficult problem for those without previous knowledge of the industry.

For this reason the new poultry-keeper is strongly advised to seek advice on this matter from an experienced poultry-keeper, and not be influenced unduly by highly coloured advertisements. If in the near future a Poultry Stock Improvement Plan is established in the Dominion the newcomer may well turn to accredited breeders for their foundation stock.

In broad terms the following are the commonest methods of starting:—

1.—By the Purchase of Hatching Eggs: Before deciding upon this method, it is essential, obviously, to ensure that an incubator of the capacity required is available. Under present conditions incubators are not easy to obtain. It is equally obvious that the purchaser should have obtained adequate experience in incubation work, since failures in hatching may easily lead to a poor start and add considerably to the difficulties of rearing.

For those who only have a limited amount of capital, it should also be borne in mind that the money used for an incubator-house and its equipment is showing a return for a strictly limited period only, and it may well be considered that such capital can be employed to a greater advantage during the initial years of poultry-keeping. An alternate method is to purchase hatching eggs and have these "custom hatched" by a reliable poultry-keeper with incubator capacity in excess of the requirements of his own stock.

Charges for custom hatching vary considerably, but the cost is usually around a 1d. per egg set. The price of hatching eggs purchased will vary with the quantity ordered, and the class of stock from which they come, but as a guide it may be assumed that between 40/- to 50/- per 100 eggs will be paid for eggs purchased in quantity. While no hard and fast rule can be laid down such eggs should not include more than 10 per cent. infertile eggs.

2.—By the Purchase of Day-old Chicks. Since the advent of sexing chicks at a day-old by the inspection of the vent, it has been possible to purchase day-old pullets. This has considerable advantages worthy of careful consideration. In the first place, any given brooding equipment can be used to full capacity in rearing pullets only, and not approximately half pullets and half cockerels. Often the latter are not required at all, but have to be reared until easly recognised, after which they may be sold at little or no profit. This applies particularly to light breed cockerels, with the possible exception of early-hatched birds. Furthermore, the beginner, by rearing pullets only, uses all purchased foods to the greatest advantage, and thereby aids in the conservation of poultry foodstuffs at the time of year when the maximum demand exists.

For the guidance of those with limited knowledge of the subject of chick-sexing, it may be stated that where this work is carried out efficiently there is no evidence of the chicks concerned being injured, while the accuracy in sexing obtained is around 95 per cent. On an average, day-old pullets cost approximately double the price of chicks of mixed sexes. Prices are around £5 per hundred chicks of both sexes, and consequently £10 for day-old pullets. It must be realised that all prices quoted vary according to quality of the eggs or chicks purchased, and the individual producer from whom they are obtained.

Whether starting with hatching eggs or day-old chicks, it is highly desirable that the purchaser should have some knowledge of the parent stock, and in consequence, wherever possible, a visit should be made to the farm or farms in question, when the type of stock maintained and management methods employed may be studied.

For obvious reasons, it cannot be recommended that the beginner start with either eggs or day-old chicks unless he or she has a good practical knowledge of rearing chickens. So much in the future will depend upon the good rearing of foundation stock that the beginner cannot afford to risk the dangers of gaining practical experience in chick-rearing during his first season. Small numbers may be reared for experience, but not all the chicks upon which future production depends.

3.—By the Purchase of "Perching Pullets" and/or Ready-to-Lay Pullets. By starting with growing stock, the use of incubation and brooding equipment, together with the problems associated therewith, may be avoided in the first year. It should be realised,

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however, that in adopting this method the beginner must expend more capital on actual stock, and is entirely in the hands of the producer who has reared the birds. Capital costs are higher, since the price per pullet must include a profit to the rearer, but against this, if the birds have been well reared, subsequent losses should be extremely small.

On an average, "perching pullets" are around ten weeks of age, and hence are finished with all brooding equipment and trained to perch. Ready-to-lay pullets are of necessity more costly, in that they will be approximately double the age of perching pullets, but here again the purchaser knows that it should be only a short period before such birds begin to show a return in eggs. If the beginner chooses this method of starting, the pullets should be booked up well ahead of the season, for delivery on a given date, from a producer who caters specially for this trade. They should not be picked up in a haphazard manner from producers who are selling surplus culls from among their growing stock after selecting their own requirements.

A combination of the above three methods of starting may be considered desirable. A further method may be suggested, namely, the purchase towards the end of the laying season of surplus laying birds suitable for breeding stock in the subsequent season. Thus, instead of purchasing hatching eggs, suitable future breeders may be purchased in late summer or early autumn, for use in the following spring. This has advantages, in that the class of bird desired as a breeder can be purchased and suitable male birds to match obtained. This allows for a greater control over the class of chick subsequently reared and used to start the farm. Many commercial poultry-keepers have a surplus of pullets at the end of their first laying season, or hens which have only gone through one breeding season. Beginners without knowledge of breeding stock are recommended to obtain assistance in selecting this class of stock and the mating up of these birds.

Newcomers starting in poultry-keeping are strongly recommended not to breed from birds during their first laying season, i.e., while pullets.

This being the case, it will follow that when stocking a farm it is necessary to buy hatching eggs, day-old chicks, or growing pullets, according to the method of starting adopted, for two years in succession. This suggestion does not necessarily hold if hens, which are suitable for breeding, are purchased in the first year. If only in their first breeding season during this initial year of the farm, they may well be used for a second breeding season in the subsequent year.

There are also advantages in purchasing eggs, chicks, or growing birds from two different sources, in order to establish two "strains" or "lines of blood," which may be subsequently crossed in order to obviate for some years the purchasing of "fresh" blood. Just as it is so essential to carefully plan the lay-out of a new farm with the ultimate object of that farm fully in mind, so is it advantageous to have a breeding programme outlined before purchasing stock.

All poultry-keepers requiring hatching eggs, day-old chicks, or older stock are strongly advised to book their orders well in advance of the breeding season. There is a keen demand today, and late-comers suffer many disappointments when attempting to place orders.

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Federation of Young Farmers' Clubs

Young Farmers' Clubs In The Pacific

THE following extracts from letters received from the Pacific will be of great interest to all Y.F.C. members. The first is from C. J. Penny, a member of the Alton Y.F.C., South Taranaki, who will probably be remembered by many as a Taranaki delegate to the Wellington Y.F.C. Council, in which capacity he attended the sixth annual general meeting of the Federation, held at Christchurch, in July, 1940. He writes:

"A month ago I asked at our Education Office if it were possible to form a Young Farmers' Club in our brigade, with the result that now we have **fourteen** delegates, **each with a club in his unit.**

"One unit Club has an attendance of 140 at its weekly meetings. The scheme appears to be quite successful, with plenty of enthusiasm everywhere. The Education Officer, who is giving us every support, is compiling a panel of lecturers and their subjects. The executive committee, of which I am the organising secretary, has asked me to write to you enquiring what our position is in regard to affiliation to the New Zealand Y.F.C. Federation; also to ask you for any information or literature which you may consider valuable to a young, enthusiastic club such as this.

"Our intention is to include bees, poultry and fruit-growing as well as the main farming products. Any available data on the rehabilitation scheme would be much appreciated also.—**70190 Pte. C. J. Penny, 8th Brigade, H.Q., N.Z. A.P.O. 150, 2nd N.Z.E.F., I.P.**"

Inquiry for Books

The second letter is from W. R. Baillie, who writes with reference to one of the "unit Clubs" mentioned above:

"As secretary of a Young Farmers' Club formed in this unit for the furtherance of our education in what will form our post-war employment, I am desirous of obtaining as much literature in the way of booklets and bulletins, etc., as possible. No doubt you are aware that such material is extremely difficult to obtain overseas, and I should be extremely grateful for anything you may aid us in.

"About any books which you consider instructive or helpful I should be very glad if you would advise me of conditions of purchase. We have a membership of sixty, and are all very interested, especially in many circumstances where conditions have changed a great deal owing to wartime influence. I believe that keeping these clubs alive augurs well for successful farmers in the future.—**279543 Bdr. W. R. Baillie, 208th Battery, 29th N.Z. L.A.A. Regt., N.Z. A.P.O. 150, 2nd N.Z.E.F., I.P.**"

Army Co-operation

The clubs referred to have been formed with the co-operation of the Army Education Welfare Service, and steps are being taken to secure their affiliation and to supply them with copies of the N.Z. Journal of Agriculture and all bulletins and literature that may prove of use.

The formation of these clubs is certainly a further indication of the value of the Y.F.C. movement, and provides another definite reason why every effort should be made to keep our organisation alive here in New Zealand. Incidentally, news has also been received of the formation of a Young Farmers' Club in a hospital unit in Egypt.

TWO MORE SCHOLARSHIPS

WHEN the selection committee appointed by the two South Island councils of the N.Z. Federation of Young Farmers' Clubs announced its award of the Lincoln College old students' scholarship, it also made a recommendation with regard to the two applicants who were placed second equal.

The committee is now very pleased to announce that scholarships have been obtained for both these Young Farmers. One, donated by the South Otago Freezing Co. Ltd., goes to Alan Raymond Rankin, and the other, donated by the New Zealand Refrigerating Co. Ltd., goes to Patrick Hugh McLoin, of Springbank, North Canterbury.

Reap ALL you sow

Don't let mistakes on the business side rob you of profits hard-won in the fields.

Every young farmer can get practical experience on a farm, but what about the business side of farming? The Farm Accounting Association has drawn up a Correspondence Course designed to give young farmers a first-class business training in farm finance, farm book-keeping, legal, and other problems. Hundreds have been helped. What about YOU!

Become a successful FARM MANAGER

Send the Coupon NOW

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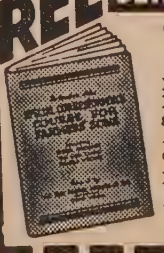


The Farm Accounting Association of N.Z. (Inc.), P.O. Box 693, Dunedin.

Dear Sir,—I am interested in Farm Finance and Accountancy. Please send me without obligation your Association's Brochure and details of your home study course.

NAME .....

ADDRESS .....

..... J.A.

Rankin was educated at the Otago Boys' High School, where he was head house prefect and form captain, and took a leading part in all games and school activities. He has been for one year on a Taieri farm, and was a member of the West Taieri Young Farmers' Club. He is 18 years of age, and has established a splendid record for dependability.

McLoin was educated at the Springbank primary and Rangiora high schools, and he has been employed on his father's farm since leaving school. He has taken a keen interest in district affairs, having been a member of the Cust Young Farmers' Club (now in recess), sports association, patriotic committee and St. John Ambulance Association.

Appreciation

Members of the Y.F.C. movement will congratulate these two South Island Young Farmers, as well as J. Crawford, who was awarded the Lincoln College Old Students' Association Scholarship, and wish all three a successful term at the College. The Federation in general and the two South Island Councils, in particular, take this opportunity of extending their thanks to the Lincoln College Old Students' Association and to the two freezing companies for their generous gifts of scholarships.

It is to be hoped that similar organisations in the North Island may be induced to donate scholarships, as no fewer than some 20 Young Farmers in the South Island have been awarded scholarships at Lincoln College during the past ten years.

—S. R. WHYTE, Hon.-Secretary Otago-Southland Council.

Reports on Club Activities

CANTERBURY.

Murchison.—Debating evenings to be started in early winter; subjects to be selected to suit all members. A delegation consisting of the chairman, secretary and Mr. A. Thomson appointed to wait on Major Skinner, the local M.P., the matter being the Matakitaki bridge. Attendance of 20 members.

WAIRARAPA.

Carterton.—Business meeting, general discussion. Dr. Jomez, veterinary surgeon, to be asked to speak at the next meeting; all farmers interested to be given the opportunity to attend. Decided to hold a club dance. Arrangements for a combined picnic with members of the W.D.F.U. There were 18 members at the meeting.

WANGANUI.

Taihape.—Final arrangements for dance. Discussion regarding the essay competition. Impromptu speeches as follows: B. Cottrell ("Training of a sheep dog"); B. J. Collerton ("Rotational grazing"); E. W. Laws ("Grass seeds"); D. Cottrell ("Planting shelter belts"); G. Thurston ("A chairman's job at a meeting.") There was an attendance of 11 out of 20.

TE KUITI.

Paewhenua.—Date of annual meeting decided. Address by Mr. J. F. Traspki on "The law concerning boundary fences, straying stock and straying dogs." Sixteen members present out of 22.

WAIKATO.

Cambridge.—Letter read from Pte. B. J. Blackmore (overseas), thanking the club for a cake received. Arrangements for a dance, the proceeds to be devoted to Overseas Members' Comforts Fund. Interesting and instructive lecture entitled "Electric power, its future, and a general outline on the theory of its production." At a later meeting, it was decided to open a National Savings account with the sum of £10. Report on dance, showing a profit of £8. Presentations to be forwarded to all ex-members overseas. Debate to be held at the next meeting. A most instructive lecture on "Animal nutrition" was given by Mr. Bowen, B.V.Sc., of the Cambridge Veterinary Club. He explained the functions performed by the various minerals and how much depended on their supply in necessary quantities. The dependence of animals, especially dairy cows, on a plentiful supply of carbohydrates during the winter was also stressed. The attendances at the two meetings were 14 and 17 respectively, out of a total membership of 42.

BAY OF PLENTY.

Tauranga.—Arrangements for a fishing trip and also a field day, both to be held in February. Impromptu speeches by all members present, to the number of fourteen. At previously unreported meetings an interesting set of films was exhibited by Mr. S. A. Woods, and an instructive talk on "Pigs" was given by Mr. R. Strugnell. Nine new members were enrolled.

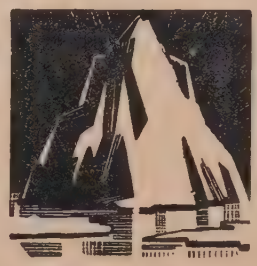
Te Puna.—The January meeting was of a business nature, and, among other matters dealt with, arrangements were made for a dance. At the previous meeting, Mr. S. A. Woods exhibited several interesting New Zealand travel films. Arrangements were made for a combined meeting with the Omokoroa Club. Sixteen members present.

AUCKLAND.

Clevedon.—Arrangements for delegates to attend the Auckland Council meeting. Game of indoor bowls to be played on the first Monday in March. Date of annual meeting finalised. Talk on "Pasture management," by Mr. P. S. Syme. Attendance of 13 members.

NEXT BEST THING To An ICEBERG

IN YOUR SHED . . . IS A



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MILK OR CREAM COOLER

High shed temperatures do not affect your grade when you invest in a Speedway Cooler. There are six models to choose from—immersion and chute types (incorporating an exclusive positive water circulating device).

Write for free illustrated literature from:

SPEEDWAY PRODUCTS LTD.

51 Albert St., Auckland, C.1.

PULLING FOR VICTORY

Railways' Vital Role

As our war effort increases, miracles of movement are required of the railways—men, munitions and produce to be shifted in ever increasing quantities. Some of this extra transportation must be won through freighters making better and swifter use of railway wagons; some of it will come from an ever greater drive by railwaymen, some of it must come from civilian sacrifices . . . New peaks are called for; they can and will be met. With the railways, war needs MUST come first.

The War Can't Wait

GOOD MONEY FOR DRIED THYME, MINT AND SAGE.

2/6 lb. given for Dried Thyme, Mint and Sage in any quantity. Must be dried. Here's your chance to make good money. Send in yours now. 2/6 lb., delivered to HALLS, Herbalists, Christchurch.

Health Notes for the Farm

It's No Laughing Matter

Contributed by the Department of Health

YOU have noticed, no doubt, how anyone on the plump side is often the target for plenty of good-natured banter. It has become a sort of established custom to poke fun at corpulence, and the victim usually enjoys it as much as anyone else. No one, in fact, minds it very much. But, medically speaking, fatness is no laughing matter. It may be, indeed, a deadly serious matter.

Medical statistics prove that obesity undoubtedly predisposes to infectious diseases, pneumonia in particular, and also to diabetes and to degenerative changes of the heart and blood vessels. Overweight may be due either to failure of some bodily process to function normally, or to improper health habits —such as the selection of wrong food, over-eating, eating between meals, and too little exercise.

When overweight is based on such causes, an adjustment in one's eating habits may be all that is needed to bring the weight back to normal. But, when the cause is not so apparent, the thing to do is to get a doctor to make an examination.

After Thirty

Competent medical opinion declares that greater attention should be given to the human body once the thirtieth year has been passed. The reason is that it is at this stage that people are apt to neglect themselves. Little danger signs of nature do not bother them—danger signs such as double chins and an increasing waist-line.

Thus it happens that, at 40 years of age, many people have become prematurely old and perhaps burnt out, whereas they should be entering upon one of the most productive periods of their lives. As an index of the state of a person's mental and physical fitness, weight is reliable; how often do you find efficiency and the capacity for sustained effort in fat people?

Weight Reduction

This brings us to the question of weight reduction. There are five points that must be considered in any contemplated attempt at weight reduction. First of all, there must be a thorough medical examination by a doctor to determine the cause of the overweight condition. It is important to know whether it is accompanied, or caused, by any serious disease of the heart, blood vessels, or other organs. Next, it is important to determine the amount of overweight and the length of time in which it can be eliminated.

On an average a loss of 1½ lb. to 2 lb. a week is usually sufficient.

Thirdly, you must plan—or have planned for you—a diet that will be adequate to protect health, and at the same time result in a loss in weight. Fourthly, the practice of eating three meals a day at regular times must be cultivated; and lastly, you will have to take up some suitable form of exercise.

There will always be with us those people who believe in the age-old delusion that somewhere there is something in a bottle that will cure their troubles — if only they can find the right bottle, and, of course, there is always someone ready to supply their requirements, ready to make a handsome profit out of their gullibility.

Quackery flourishes mightily in the field of human faddism, and perhaps nowhere does it find quicker root than in the widespread desire for quick, comfortable and effective weight-reducing. It cannot be done. You cannot get quick, comfortable and effective weight-reduction by simply sucking a tablet, or swallowing a tonic, or pulverising your body with all sorts of mechanical gadgets.

Injurious to Health

If these anti-fat preparations, drugs and combinations of treatments were simply humbugs the medical profession could well ignore them, but, unfortunately, these short-cuts to a fine figure are actually or potentially injurious to health. Most obesity cures carry the specific claim that they are short-cuts to weight reduction, and that those who use them do not need to modify their eating habits, nor do they need to take more exercise. To anyone without medical training this has an obvious appeal. It's an easy way out of an embarrassment.

The treatment of overweight may be, and frequently is, a most complex matter. Not that the fundamentals of overeating and under-exercising are in themselves complex, but that the application of individual treatment may well be so. How much less should the overfat eat, and how should the dietary be arranged so that the nutritional balance is not too greatly disturbed? How much more exercise should the overweight take, and still not throw a dangerous strain on the heart and other organs?

These are questions that have to be worked out in detail. You cannot take one formula and say, "This will suit everybody." Each person is a separate problem, and has to be treated as such. This is a job for the doctor.

Diet Method

There is nothing, of course, to prevent you from trying the diet method of slimming in your own home. It means that you have to do without a lot of things you will miss for a while, but at least it is safe—much safer than some of the commercial preparations.

The first foods to cut out are the starchy foods, such as scones, pies, cakes, biscuits, cheese, sugar and bacon or fat meat.

You must have a pint of milk a day, but remove the top milk if you are worried about it, or use dried skim-milk for cooking.

Eat lean meat (not fried, of course), and plenty of leafy green vegetables. At the same time, eat less of the more starchy roots, and keep just one small potato. Eat as much fruit as possible, but when you cook it use a minimum of sugar, and instead of morning tea just have a drink of tea, or preferably a glass of milk.

WANTED URGENTLY—DRIED RED CLOVER TOPS.

Farmers! Boys and Girls! Dried Red Clover Tops are urgently wanted for medicinal purposes. Supplies from overseas unobtainable. 2/6 lb. given for any quantity, (must be dried), delivered to
HALLS, Herbalists, Christchurch.

FARM LIGHTING BATTERIES

New plate groups to replace worn Delco and other make cells from 10/-. Guaranteed 2 years, supplied to fit any make glass or rubber jars. State make, number plates per cell, dimensions of jar.
Rokfire Electric Batteries Ltd.
Box 66, Petone.

THE GOOD NEIGHBOUR.

WHEN I was away recently I had the thrill of visiting a person with whom I had corresponded for some time. I knew she was a victim of rheumatoid arthritis, but I was not prepared for the degree of crippling it had imposed upon her frail form — her hands are misshapen and she can move only with difficulty, limping heavily when she walks. Yet it is wonderful what loveliness those poor crooked fingers can create.

Give her some paint, a handful of dried seed-pods and a few odd scraps of flowered silk, felt or leather, and she will fashion the most exquisite articles. She puts me to shame, for if the same materials were set in front of me I am afraid they would end up only a little removed from their original form—notwithstanding that I have two good hands whereas hers are twisted and bent.

Her face has a serenity not often to be seen in the city and the restful quality of her voice is soothing to tired nerves. Her sympathy and her understanding of other people's problems are boundless. She reads wisely and her comments on current happenings are shrewd and full of humour; but above all, hers is an outstanding courage which has battled against unequal odds, and though beset by constant pain, still gives to others so much that is beautiful.

I think these words of D. K. Antrim's apply very truly to my friend: "Drums or medals are not for such folks as she, but they are heroes nonetheless. They are heroes the hard way, since they rout single-handed the unseen foes of doubt, despair and discouragement. I salute them—those valiant souls who never lose their hold on hope and faith, who meet the blows of fate without flinching."

And my thoughts turn to others who are faithfully 'carrying on' despite worries and difficulties though they will never receive public reward or recognition;

Those wives and mothers who have lost their dear ones, yet have not allowed themselves to become immersed in grief, but instead, speak bravely of those who are gone and continue to minister to the living, not inflicting their sorrow on those around them;

Those who have sufficient faith in the future to bring new lives into this war-torn world;

Those who face financial straits with cheerfulness, not letting hardships embitter them, but retaining a sense of the fundamental values in life;

Those whose activities hold none of the excitements of war, who wear neither badge nor smart uniform, yet are burdened with the monotony of unremitting, essential tasks;

Salute to Courage

I pay tribute to you all, AND I SALUTE YOUR COURAGE.

Mary

Blue

I love blue. Don't you?
Think of the sky and the starlight too,
And the myriad flowers that wear this hue . . .
Think of the sea, and the dawn mist too.
And the Mother who wore a mantle of blue.
And the candles we light all winter through
Have haloes of gold and hearts of blue . . .
I do love blue. Don't you?

H. Rostron.

Every day is a fresh beginning;
Listen, my soul, to the glad refrain,
And spite of old sorrows and spite of sinning,
And puzzles forecasted and possible pain,
Take heart with the day and begin again!

Anne Pattrick

MENTION of Sir Truby King invariably brings to mind the Plunket System, of which he was founder, and in this connection countless mothers have reason to revere the name of one of their own sex — Anne Pattrick— without whose wisdom and ability infant welfare would never have attained such a high standard. Miss Pattrick had a decided talent for home-making, and being one of a large family she had plenty of opportunity to exercise her ability. Indeed, had it not been for the illness of a brother and her subsequent success in looking after the patient she might never have experienced the urge to take up nursing. It says much for her courage and determination that although she did not start till her mid-twenties she not only completed her hospital training, but afterwards attended the Karitane Hospital in Dunedin in order to add Plunket Nursing to her qualifications. Her capability so impressed Dr. Truby King that she was invited to fill a sister's position there.

On the outbreak of the Great War she volunteered for active service, nursing on the hospital ship "Marama." After the war she gave all her energies to organising the London Mothercraft Training Centre on Plunket lines (Sir Truby King having been requested by the Imperial Government to demonstrate his system). When she returned to New Zealand in 1920 she was appointed Director of Plunket Nursing and for 14 years she gave "her very self" to the task. Her death occurred in 1937 during one of her visits to England. The work she loved continues to flourish and the memory of "her greatness of spirit" remains to encourage and inspire those who follow after in the profession of Plunket Nursing.

A garden is the purest of human pleasures, it is the greatest refreshment to the spirit of man.

This new free booklet from

FRIGIDAIRE

helps you solve many wartime food problems

36 pages of simple, practical suggestions — specially prepared to give wartime help to those who bought more than seven million Frigidaires—now offered to every refrigerator user! Call or send for your free copy of WARTIME SUGGESTIONS today.

Today it's specially important to take good care of your Frigidaire Refrigerator and thus enjoy fully the protection and economy it was built to provide.

YOU FACE NEW PROBLEMS

The war has played havoc with meal-planning. Almost daily you are confronted with new food-buying and food-keeping problems.

Our major responsibility is to turn out weapons and war materials for our armed forces. Yet knowing how important refrigeration is, we are anxious to help solve some of your wartime refrigeration problems.

Necessary wartime measures may have changed your pattern of living, particularly your shopping and eating habits. For some foods are rationed. Others not always easy to get. Besides, store deliveries have been curtailed. Shopping trips are fewer.

Even so, your refrigerator can help make meal-planning easier — if it is used properly.

DO YOU KNOW THESE THINGS?

Do you know how to defrost and completely clean your refrigerator in just fifteen minutes? WARTIME SUGGESTIONS tells you.

Do you know all the facts about keeping fresh meat safely? Which meats should be frozen, if kept more than twenty-four hours? WARTIME SUGGESTIONS tells you.

Do you know what can safely be kept outside of your refrigerator; what must go in? WARTIME SUGGESTIONS tells you.

FRIGIDAIRE TELLS YOU HOW

Frigidaire's new, timely booklet, WARTIME SUGGESTIONS, is filled with useful, helpful ideas. It tells you how to make your refrigerator seem larger, how to keep ready-cooked foods on hand, now that canned foods are rationed. Gives meat-keeping facts you need today. Tells how to use left-overs. Lists easy way to give your refrigerator the best of care. Answers dozens of questions every housewife is asking.

We want you to have a copy. It represents the combined thinking of Frigidaire home economists, engineers, and service experts.

Look for the Frigidaire sign on your dealer's store, or find name and address in the classified pages of your telephone directory.

Get WARTIME SUGGESTIONS booklet from your Frigidaire Dealer or mail coupon below.

FRIGIDAIRE

FRIGIDAIRE NEW ZEALAND, PETONE,
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Please send me my free copy of your "WARTIME SUGGESTIONS."

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"What I Miss Most in Wartime"

"A Poverty Bay Mother" is the winner of this month's competition, "What Do I Miss Most in Wartime?" Her answer—OUR BOYS—will find an echo in the heart of every reader whose menfolk have gone to fight overseas.

One contributor, replying to the question, said: "The answer is one word, in large letters—ELASTIC! I wonder how many other Good Neighbours will say the same thing." Well, after reading all the entries, I would say approximately 95 per cent.! Apparently the absence of luxuries affects the women of New Zealand very little, but elastic ranks as one of life's little necessities that it is most inconvenient to be without.

"Strathaird," Wellington, gained second place with her humorous plea on behalf of an elastic-less sisterhood.

First Prize

WE certainly have had to forego many things in wartime. "What do we miss the most?" There is only one answer to that—OUR BOYS. Items like sardines, salmon, sugar, biscuits, and etc., seem so unimportant compared to the terrible longing for our young people. Speaking for myself, my life was a very busy one, with a large house and garden to look after, and a big family as well, and not only my own, either, for the house was always full of other boys who had no people here. Tennis on Saturdays and Sundays—the cooking and the sandwich cutting it entailed! They always stayed till long after dark and everyone helped to wash up and what happy washing-ups they were. But the effort was worth it. "Gosh, I enjoyed myself." "It was corker." "Is there any of that cake left with the strawberries and cream on?" This is what I miss.

I often think of those lines: "God gave us memories that we may have roses in December." One lives now on those memories. Looking back, all the work we did seems a joyful thing. I miss the sound of: "Is that grey shirt back from the wash yet, Mum?" "Do you know if my socks are darned?" "I say, Mum, can you mend this hole in my pants if I get you the needle and wool?"

Now there is silence—we have moved to a smaller house, my husband, myself and one younger son who is very dear to us—and we often look back on the happy-go-lucky, busy days that are gone.

There are two other things, I must own, that I long for, and those are: sheets at not quite such an exorbitant price, and elastic. Beyond that I do think we ought to forego, cheerfully and without grumbling, all the other little luxuries we now have to do without.—**A Poverty Bay Mother.**

Second Prize

IF anyone should ask of me why I am working so hard toward victory I would reply without hesitation, "So that rubber may be again released to manufacture elastic." Be honest with yourselves, women. Admit that it makes you shudder to think of the dignity of our womanhood reduced to a piece of elastic (long since stretched to the utmost) and an insecure safety-pin!

The National Savings posters urge us to "keep our tanks rolling, our planes flying, and our guns roaring." In my humble opinion if the simple words "and bring nearer the day when rubber may be released"—be added to the text, the women of the Dominion would stand behind the campaign as one man—or rather, woman—and put every penny scrimped and saved from the housekeeping expenses into their National Savings account. These things, alas! are organised by the male of the species, and however keen and far-sighted he may be over some things, he does not understand how we womenfolk feel about the position. The idea of an elastic-less New Zealand fills us with horror.

We take small pieces of elastic and sew them to other small pieces until, behold! one large piece, to be jealously guarded from marauding sisters, and finally attached where the situation is gravest. But, as Shakespeare says, "It is a mocker of my labour." Here is only one length, and dozens are required. To quote again the Immortal Bard, this commodity is a "minister of fate." With it, the queen upon her throne is not possessed of greater ease of manner; without it, we slink in fear and trembling with our morale at its lowest ebb.

So get behind the war effort, women of New Zealand. Work for victory and the day when once more we may uphold the honour and dignity of our sex.—**Strathaird, Wellington.**

Our boys are missed in many homes.

Competitions.

APRIL

Be sure and send me your ideas on the question: "What do you consider good hobbies for children?" Remember the closing date—April 15.

MAY

The title of this month's competition is a very practical one—"Kitchen Gadgets." Let me have your hints on how to make kitchen-work run more smoothly. Share with other readers those bright suggestions that you have proved to be such savers of time and effort. For instance, I know of one housewife who has fitted corks under the handles of all her saucepan lids: no burnt fingers when she lifts a lid to see if the vegetables are boiling; no precious minutes wasted in search of a pot-holder. So get busy with your pens and forward me the results by May 15.

"KITCHEN GADGETS"

The prizes are 10/- for first, and 5/- for second.

"MARY,"
C/o. "Journal of Agriculture,"
P.O. Box 3004, Wellington.

Highly Commended

THERE are a lot of things I miss in wartime—we all do. The little luxuries we have always had, namely, chocolates, silk stockings and dainty undies, even the elastic that is now a thing of peace-time. The kitchen gadgets that lightened many a monotonous task; a plentiful supply of crockery and cutlery for everyday needs, with some to spare for use when visitors walk in unexpectedly; all the wool and nice prints and other materials to make up for the girls; plenty of shirts and trousers so necessary to little boys whose aim in life seems to be the amount of washing and mending they can make for Mum.

Of course, all busy mothers miss these things, but most of all I miss the smiling faces of the lads of the district—those young men who have gone forth to battle for us, even to lay down their lives if need be, that we may have peace and comfort in the future. May God bless them and return them to their homes when this ordeal is over.—**Gee-Bee, Whakatane.**

WARTIME economies; the frantic search for ration books on shopping day; the prohibitive prices of many articles; these have become everyday things to us now, yet we can still find enough to share so that we may know the joy of giving. What I miss most is the regular arrival of overseas mail. Now-a-days air-mail letters take very nearly as long to arrive as pre-war surface mail. What a wealth of friendship and joy I find hidden in their pages, and among the happiest letters are those from the isles which our own rationing helps by keeping their necessities from being cut still further.—**Sunny Sal, Southland.**

I CAN go hungry and shabby with the most enduring, but one thing I do lament in these days of trial, and that is doing without the Sunday visitation of our friends. We live rather off the beaten track, and it was our habit to work hard all the week and on the Sabbath to rest and enjoy our friends who came from far and near. It was such a delight to picnic together on the river bank or indoors, according to the weather, to fill baskets with farm richness—fruit, mushrooms or vegetables. These friendly visits are only a memory now, the participants spread to the four winds, but we trust that the days will come again when we will all meet for happy companionship "on the farm."—**Goose-girl, Waikato.**

IT'S not the hot-water bottle in my bed,
Nor the silk stocking from off my leg;
It's not the early cup of tea,
Nor yet the cream from my coffee;
It's not the scarce and much-loved sweets,
Nor the shortage of sugar from my eats,
Nor the lack of petrol for the car,
But something greater than these by far:
MY HUSBAND!

—Emma, Timaru.

WAR URGES SCIENCE TO NEW INVENTION

Everywhere the Forces speak with pride of their ships, planes, tanks, guns. And justifiably. They're perfection for their job. War drives science to it, then the perfection war-learned is applied to peace production. ● Your Peace Rainster—and there'll be one for all then—will be the better for the war. New waterproofing,* new materials, new method better than ever before will all go to the making of Rainsters better than ever before. ● But Rainster must help win the war first: Rainsters for the Forces must still come first. Then! Then you'll have a Rainster and how proud you'll be to say: It's a Rainster!

Rain Rain's Rainster REGD.

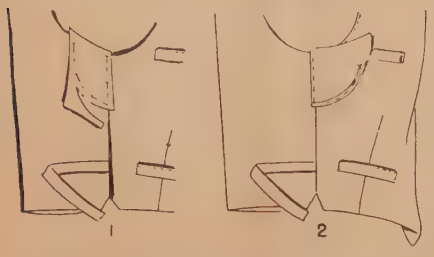
* The famous Rainster-proofing is the secret of the praise everywhere for Rainster by the men and women of the Forces.

Mending Men's SUITS

VEST REPAIRS.

Vests often need repairs at the underarm. Mend a small hole or worn spot here with a shield patch. Use a panel patch for larger worn places.

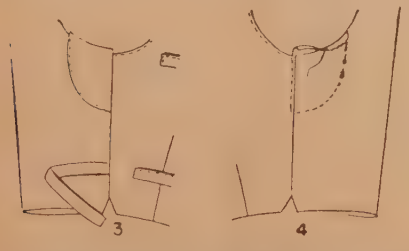
Shield Patch.—1. Cut a paper pattern that will cover the worn part of the vest. From this cut a patch of rayon lining material. Allow about one-fourth inch for turning under all around.



2. Turn under, baste, and press the curved edge of the shield. Lay the right side of the rayon patch back against the right side of the wool front of the vest. Stitch in line with the underarm seam of the vest.

3. Turn the patch back in place over the worn spot, then stitch by machine to the vest.

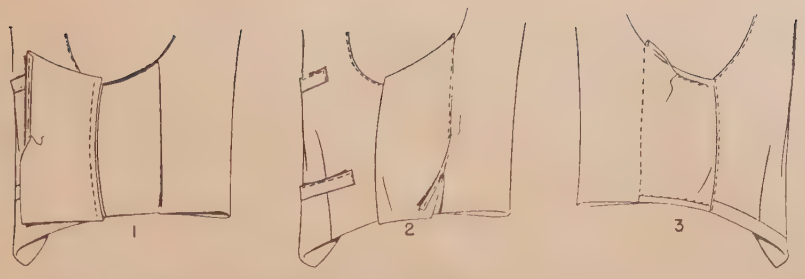
4. Turn the top edge of the shield over to the inside of the vest and hem by hand.



Even though both sides of the vest may not need to be patched, it looks better to have a patch on each side if a man goes coatless.

Panel Patch.—Cut a strip of rayon the length of the vest at the underarm, plus a seam allowance for turning under at both top and lower edge of the vest. Cut it wide enough to cover the worn spot and allow for about one-fourth inch turn under at each side.

1. Lay the right side of the patch back against wool front of vest. Stitch along under arm seam.



2. Press the patch toward the back of the vest. Turn under, baste, and press the other side of the patch and stitch it to the vest, covering all the wear.

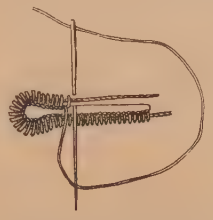
3. Turn under and shape the patch over the top and lower edges of the vest. Hem by hand to the lining of the vest.

SMALL REPAIRS.

There are a number of minor repairs that may be needed on trousers, coat, or vest. No matter where they are, the method for making the repairs is the same.

WORN BUTTONHOLES.—Use twist made especially for working buttonholes on men's suits. If you can't get this buttonhole twist, use double ordinary thread. Wax it for strength and easy handling.

Pick out all worn and ragged stitches of the buttonhole. Be careful not to



pull the hole out of shape as you rip out the old stitching. Join new stitching with old carefully so that it won't show where the repair is made.

If the entire buttonhole has to be reworked, work over gimp or several strands of thread twisted together and waxed.

PULLED-OUT BUTTONS.—If a button has pulled off and taken a bit of cloth with it, darn it or patch it—depending upon the size of the torn place.

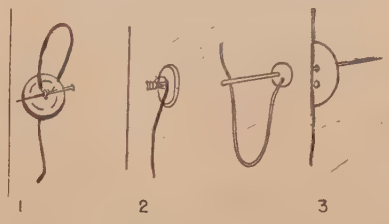
If the hole is smaller than the button, darn with matching yarns over a small piece of reinforcing material slipped under the hole. Then sew the button on again.

If the suiting is torn beyond the button so that a darn wouldn't be strong enough to hold the button, set in a carefully matched block patch as you would for repairing a worn elbow.

To prevent strain that may cause the button to pull a hole in the suiting again, sew the button on with a shank.

1. Make the shank by laying a pin or two across the top of the button. Sew several times over the pins and through the button and material.

2. Pull out the pins, lift the button, wind the thread beneath the button, and fasten off. Length of shank needed depends on thickness of the suiting.



3. For even greater protection, sew a tiny stay button directly under the top button but on the inside of the suit. Sew through both buttons at the same time and make a shank inside the top button long enough to allow the buttonhole to fit underneath without strain on the cloth.

TO RESTORE PIN STRIPES.—Pin stripes worn off at the knees, elbows, or seat of a suit can be restored by machine. Since the material is likely to be worn a bit in these places it is a good idea to reinforce them at the same time.

Cut rayon lining pieces the proper size and baste them underneath the places to be restriped. Thread the bobbin of the machine with white thread and use a spool of thread that matches the suiting for the top stitching. Tighten the top tension of the machine so that the white thread underneath is drawn to the surface and gives the same effect as the stripe. Experiment until you get the right tension adjustment, then stitch along the old stripe lines. Tie and clip off the thread ends on the inside of the suit.

When other kinds of stripes wear off, it is probable that they too can be restored.

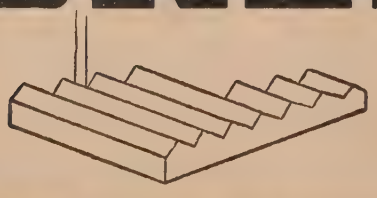
REWEAVE PATCH.—When a hole or a close group of holes would make a darn difficult or when a darn would show too much, apply a patch over the hole. This patch, put on from the right side of the material, is suitable only for material that is rather coarsely woven.

On the material to be patched, mark with four pins a square or rectangle the size of the patch you need.

WHEN THE WORLD SAYS GOOD-BYE TO *Blackout Blues*

When the lights of the world shine again - - - when victory brings plenty - - - then once again you will share in the good things of life. Until then the Onehunga Mills are weaving for war, and only limited quantities of Onehunga products may be released for civilian use. To-day it is our privilege to supply Onehunga blankets and woollens to those who need them most—on active service. When victory is won it will be your pleasure once again to invest in the quality of Onehunga products. Meantime, rest assured that available stocks are being allocated with strict fairness and that your usual store is obtaining its proportionate quota.

ONEHUNGA



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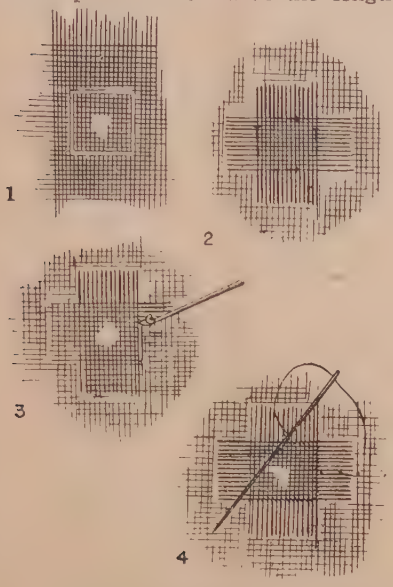
1. Clip out only one yarn on each side of the square or rectangle. Pull one yarn out in each direction, leaving the outline of the patch you want to make.

2. Cut a matched patch piece about 1 inch larger all around than this space. Be sure the lengthwise yarns of the patch match with the length-



wise yarns of the suiting. Ravel out yarns from each side until the patch piece is an exact fit. Lay the matched patch on top of the hole on the right side of the material. Pin it in place.

3. From the wrong side of the material, pull the raveled yarns through to the wrong side with a small crochet hook. Draw the raveled yarns through the spaces left by the pulled out yarns. Do this all around until the patch sets smoothly over the damaged spot.

4. With needle and thread take little hemming stitches on the wrong side of the patch along the line where the yarns have been pulled through. This holds the patch in place. Steam-press the patch.

THREE-CORNER TEAR.—If the tear is not frayed badly, the best way to mend it is to seam by barely catching a yarn or two inside the frayed edge. Steam-press the seams open, clip off any thick corners. From the right side, hide the seam line with the rantering stitch used to finish off the worn collar roll.

If the tear is badly frayed, or if the suiting is so heavy that a seam would be thick, machine-darn the tear to a matching piece of suiting or a piece of lining.

Baste a piece of matching cloth or lining under the tear. Arrange any loose yarns so that you will stitch over them. Thread the machine with carefully matched thread. Stitch back and forth over the tear and deep enough into the material so that it will be sure to hold. To stitch backwards, barely lift the presser foot, then move the material forward slowly enough to get stitches of the right size. Lower the foot again to stitch forward. This is quicker than turning your work or using the lever that new machines have for stitching in reverse.

SMALL HOLES.—Repair tiny holes by reweaving with yarn pulled from the in-seams. To repair larger holes, set in a carefully matched piece of cloth under the hole and darn so as to hold the cut edges flat.

This article, "Mending Men's Suits," by C. L. Scott and A. F. Hagood, is reprinted from a bulletin issued by the United States Department of Agriculture.

HARPIST

Spring hugs her harp close,
Glad to have the old instrument back
Strung with new strings.
With slim fingers,
Pallid and green
From long staying indoors,
Spring runs over the strings
That stand between heaven and earth
And touches chords of an old song
That she had half-forgotten.
I hear Spring
At her harp of rain and earth,
Trying to remember
The lovely appregios.

—R. J. ROE.

In her is beauty without pride,
Youthfulness without folly:
To all her works virtue is her guide,
Humbleness hath slain in her all tyranny.
She is the mirror of all courtesy;
Her heart is a very chamber of holiness.

—*Chaucer.*

I seem always as one who climbs the hills
When I part from her, and feel fresh and green;
So do I joy in looking on my lady;
And when I see her not, like any rock,
I stand and watch in faith.

—*Dante.*

If you are short of icing-sugar, and yet still wish to make your cake look decorative, put a little icing-sugar in your flour sifter, and sift it over the cake. This will give an even finish, the sifter reducing all the lumps to a smooth powder.

Yes, Berlei made that corset . . . but not for you. It very nearly fits you, but very nearly is very bad business in corsetry, and we'd rather you didn't buy it.

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2 *Look for more freedom at waist and hips than you normally would.*

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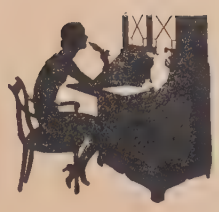
Mary's at - Home -



MY thoughts travel many miles when I re-read Dickens, for the south-east of England was my birthplace, and the heart of "Dickens'-land" is a five-mile radius of Rochester in Kent. In the adjoining town of Chatham, Dickens lived as a small boy, his father working in the dockyard there. On my frequent trips to the Victoria Gardens, I used to pass the house in Ordnance Terrace which bore a small tablet showing the date of residence of the Dickens family. In taking a short-cut across the fields of Ford, I was passing over the scene of the duel —which so nearly took place—in "Pickwick Papers." The walk of five miles from Rochester to Cobham, which goes for the greater part of the way through the stately trees of the 700-acre park, the property of the Earl of Darnley, is also described in Pickwick. In the village is the famous Leathern Bottle, an old inn, with the figure of Tracy Tupman painted on its sign. Here it was that Dickens made Tupman banish his sorrows with breakfast. It is not far from Cobham to Gad's Hill Place, where Dickens lived for several years before his death, in 1860, at the age of 58. My maternal great-grandfather was friendly with Dickens, the two men often going for long rambles together.—**E.H., Nelson.**

I WAS three years old when we went from Mangaweka right up into the King Country to a section my father had taken there. Vivid pictures of that time have always remained with me: the dim depths of heavy bush; the silence; trees being blazed to mark the way, there being no roads; the haunting call of moreporks which became as familiar as the snowy peak of Ruapehu viewed across the tops of dark green trees. When I was five I came out on the way to Raurimu, 15 miles distant, to attend school. In the two intervening years, the Main Trunk railway had been opened. The tablet porter's wife at the small station asked mother in for a cup of tea while awaiting the train. Mother hesitated in accepting the kind offer. Said Mrs. Tablet Porter: "Don't worry, we'll hold the train for you if it comes in." And they did!—**Tiggety Boo, Kati Kati.**

I HAVE a very vivid memory of an incident which happened when I was a five-year-old. One wet day the infant school was dismissed at lunch time, and I set out alone down the long road to the town bridge which had to be crossed on the way home. In those days bullock waggons were no uncommon sight and coming down the centre of the road was a lumbering team of bullocks with the driver walking nonchalantly alongside. I passed it, when suddenly, to my childish horror, the bullocks lurched to my side of the road—they would get me, I thought. Fearfully, I ran ahead and then looked back again: they were still following. I fled across the road to the other footpath. Now I felt safe, those bullocks couldn't catch me. I glanced behind. Horrors, those animals were coming across the road to my side. I didn't know what to do, so on I fled, and believe me, every time I crossed or recrossed the road the bullocks did likewise till I was nearly petrified with fright. At last I spied my father coming towards me from the opposite direction, and with my hand in his I now felt safe. To this day I have never been able to decide whether the "bullocky," seeing my fright, purposefully steered his team from side to side of the road, or whether it was the habit of bullocks to meander in such a fashion.—**Alix, Wairoa.**

Fortitude

Fortitude . . . is an amazing detachment from material circumstances, a sort of spiritual fortification against any practical humiliations of poverty or hunger or inconvenience.—Ann Bridge.

* * *

When we are lost in gloom of grief and fear,
With worry like a darkenss, far and near,
We yet can find a glimmer in the dark,
Where quiet courage lifts its shining spark.

—Ritchie.

PLEASE may I join your happy gathering? It would be so pleasant to be "at home" with you all and to share your experiences. Maybe I could pass on something to interest you, too—a funny story I heard the other day; verse-making, and the latest book I have read; gardening and patriotic activities. I am sure there are lots of things we can share.—**Pebbles, Otago.**

AS a little girl I was very fond of fishing for eels in the dam my father had built for the cattle. Mostly I caught the eels in an old iron kettle with the spout off. The eels used to crawl in and go to sleep, and then I would carry the kettle home, often with two or three eels inside. One of my father's men told me to fasten some horsehair to a stone in the stream, and in about a month the hairs would turn into young eels. Gathering a bundle of horsehair in my pinafore (I believe it was quite valuable in those days) I placed it as I had been instructed. Daily, for about a fortnight I watched the hair waving about in the water. So intent was I that I failed to notice my father's aproach and the sound of his voice nearly made me jump out of my shoes, for I had taken his horsehair without permission. When I told him the story he gathered me in his arms, saying, "Don't believe such nonsense, child. You could leave the hair there for twenty years, and it still would never grow into eels." It was a great disappointment and after that I was not so ready to believe people's tales.—**Rayna, Te Puke.**

A SHORT while ago the hills were covered with golden gorse and broom. They are terrible pests to the farmer, but they seem to offer the beauty of their myriads of blossoms by way of compensation. We in the country get our little pleasures, though they may not be so exciting as city ones. I think one of the greatest pleasures is the kindheartedness of neighbours. Here is an instance which happened this morning: The children have to walk half a mile to the next-door neighbour's every day to get the school bus. When they arrived, Mrs. Neighbour asked the eldest girl if she would take a billy of milk to a friend nearby. Miss Twelve was quite willing, remarking that she had forgotten to take out the house milk that morning. As we separate the milk as soon as the milking is done, it meant I was left without milk for the day. About 10 o'clock Mrs. Neighbour arrived on her bike with a large preserving jar of milk, also a bag of beetroot, a cabbage, and a banana and an orange for Miss Ten, who had just had her tonsils out.—**Brynmawr, Aramoho.**

I HAVE been very interested in the cheerful thoughts mentioned in your pages. Here is one written by J. B. Priestley: "Think of the tiny things that bring delight—a child laughing, somebody playing the piano well in a strange house, the sight of a friend's face in a crowd, the smell of a dusty country road after a little shower of rain. How one of these things can light up and change a whole day." How true this is. As we go through this year let us smother care in happiness and laughter.—**Sunny Sal, Southland.**

Mabel chose the little threepence!

When Mabel was a very small girl, she learned that a small threepence was better than two big pennies because the little threepence was two pennies plus an extra penny.

Today Mabel buys her Baking Powder on the same principle. She's proved that a Phosphate Baking Powder made with the famous A. & W. Pure Food Phosphates gives her cooking results superior to those she got with the old Pre-war Baking Powders. But she knows, too, that Phosphate Baking Powder gives her an extra health advantage because it provides Phosphorus in the diet. Now Mabel is not only a smart young housewife, she's a very good mother, and she's studied up all this vitamin and mineral business,

and she knows that we New Zealanders don't get enough Phosphorus in our ordinary foods, and that Phosphorus is very important for nerves and teeth and bones, digestion and general bodily tone.

So Mabel demands a Phosphate Baking Powder because she can't see one reason why her family should miss the extra advantage Phosphate Baking Powders provide. I think she's right, don't you?

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Mary's Mixing Bowl

Left-Overs

DO you have trouble in using up left-overs? Does the sight of a plate of cold vegetables, or a stale piece of cheese, or the remains of a joint, or other odds and ends of food, depress you? If the bread bin is full to overflowing do you give the surplus to the fowls, or do you seek about for ways of utilising it for the family needs—crisp little rusks to serve with soup; baked "fingers" for the children; a plentiful supply of breadcrumbs for the many recipes which enumerate "crumbs" as one of their ingredients? Cold potatoes are invaluable. They form the base for innumerable dishes: pastries, soups, sweets and savouries. Vegetable water, so rich in mineral salts, should never be thrown away, but used for stock and gravies. Cheese and bacon combine well and add greatly to the flavour of many dishes.

Even if we do not all agree with the writer who said: "If there is nothing left over from a meal I am desolate, for I look to left-overs round which to plan my meals for next day," at least, we can pride ourselves on our skilful and thrifty ways with food, bearing out the old adage, "Waste not, want not."

Here is a list of recipes specially chosen to help you with the problem of left-overs:—

FRUIT MOULD.

Left-over Stewed Fruit: Sieve the stewed fruit, adding enough water to make a pint of the pulp. Add more sugar if not sweet enough. Dissolve 2 dessertspoons of gelatine in hot water. Bring the fruit to the boil, remove from the stove, add the gelatine, stirring well, and pour into a mould to set. Serve with blanc-mange or custard.

CHOCOLATE BREAD PUDDING.

Left-over Stale Bread: Slice the bread thinly, and butter. Jam may be spread on the bread, also, if desired. Apricot, blackberry, or raspberry are good flavours to use. Blend 1 oz. of cocoa and 3 ozs. sugar with a little cold milk, and then stir it into a pint of milk which has reached boiling point. Pour this over the bread in the pie-dish and leave to cool. Finally, add a beaten egg and sprinkle the pudding lightly with cinnamon, and bake in a slow oven for one hour.

FRUIT WHIP.

Left-over Stale Sponge, Gingerbread or Plain Cake: Place the cake in the bottom of a china dish, and pour over it a pint of hot custard. Dissolve 1½ dessertspoonfuls of gelatine in 1½ breakfast cups of boiling fruit puree (stewed fruit put through a sieve) and when this has cooled, whip with a rotary beater till thick and fluffy, and heap it over the cake and custard mixture.

SPINACH SOUP.

Left-over Vegetable Water: Heat ½ oz. of butter, and brown a finely chopped onion in it. Add 4 cups vegetable water, salt to taste and cook a bundle of spinach in this till tender. Put through a sieve. Heat ½ oz. butter, and stir in 1 oz. flour, adding gradually ½ pint milk and bring to the boil. Add the sieved vegetable liquid, simmer for five minutes. Before serving, sprinkle with a little nutmeg.

CURRIED VEGETABLES.

Left-over Mixed Vegetables: Peel and chop an apple and an onion. Brown the onion in a small quantity of dripping (about 1 oz.). Stir in 1 oz. of flour and 1 dessertspoon of curry powder into ½ pint of stock or vegetable liquid, add seasoning to taste and the chopped apple, and browned onion. Simmer for 10 minutes, then add 1 teaspoon of vinegar and the mixed (cooked) vegetables, of which there should be 1½ lb. approximately. Simmer for another five minutes before serving. Cooked rice is an excellent addition to this dish.

BEAN SAVOURY.

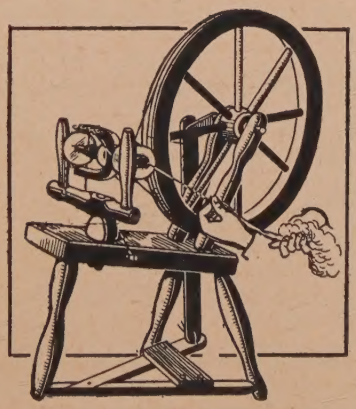
Left-over Haricot or Lima Beans: Place the cooked beans in a pie-dish. Make a white sauce with milk and cornflour, season to taste and add a finely chopped onion, and pour over the beans. Sprinkle with grated cheese and bake in a moderate oven till nicely browned.

LUNCH ROLL.

Left-over Cooked Rice: Sift 8 ozs. flour, ½ teaspoon salt and 1 teaspoon baking powder together and add 4 ozs. shredded suet, cutting it in with a knife. Mix with sufficient water to form a firm dough and roll out on a floured board. Spread with meat extract, then cover one half of the pastry with the cooked rice, some sliced tomatoes, grated onion and cheese, and chopped parsley. Fold over the remaining pastry, making it into a neat turnover shape and bake in a moderate oven.

WHY NOT

Spin your own Wool. Make up your own material at a fifth the cost . . .



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FISH SALAD.

Left-over Cold Fish: Free the fish from any bones or skin, flake it, and leave to soak for an hour in a small quantity of vinegar (lemon juice is preferable if the lemons are available). Arrange lettuce leaves in a salad bowl, then a layer of chopped water cress, a grating of raw onion, sliced tomato, and lastly the flaked fish sprinkled with chopped parsley. Serve the dressing separately. (An easy dressing consists of 2 tablespoons top-milk, 1 tablespoon ordinary milk, 2 teaspoons sugar, ½ teaspoon mustard and ½ teaspoon salt mixed well together, and then blended with a tablespoon of lemon juice).

MOCHA JELLY.

Left-over Black Coffee: Dissolve 2 dessertspoons gelatine in a little hot water. Heat the coffee, add 3 tablespoons of sugar and a pinch of salt, and stir until the sugar is dissolved. Now add the gelatine and 2 tablespoons lemon juice. Pour into a mould to set. If desired, leave ½ a cup of the mixture in a separate basin and when it begins to thicken whip with an egg-beater and fold in an egg white beaten stiff and sweetened with 2 teaspoons of sugar. Pile this on top of the plain jelly and serve when firm.

OAT PUDDING.

Left-over Porridge (Oatmeal, Cream-oata or Rolled Oats): Heat the porridge, add a handful of chopped dates and some brown sugar. Pour into a basin to set. When ready to turn out serve with the following sauce: A knob of butter, 3 tablespoons raw sugar and 1 tablespoon cornflour blended with ½ pint water and brought to the boil, stirring all the while, then flavour with 1 tablespoon orange juice and 1 teaspoon of the grated rind. (Lemon may be substituted for the orange, if desired). Sprinkle each helping with chopped walnuts.

MEAT SAVOURY.

Left-over Beef or Mutton: Mince the cold meat together with an onion, and mix it with a little gravy, meat extract or vegetable water. Place half of the mixture in a piedish, cover it with sliced tomatoes, seasoned to taste, then add the rest of the meat and another layer of tomatoes. Dot with butter and sprinkle with breadcrumbs. Bake in a medium oven till brown.

DATE FINGERS.

Left-over Cold Potato: Mash the potato till smooth (you will need about 4 ozs. of potato). Add the same amount of flour and rub in 2 ozs. butter, add 2 ozs. sugar, and mix with milk and water to form a stiff dough. Roll out and spread half with a layer of dates previously softened in hot water and mashed. Dust lightly with cinnamon and cover with the other half of the potato pastry. Sprinkle with sugar and cut into fingers, baking in a moderate oven 15-20 minutes. These can be served either hot or cold.

APPLE CAKE.

Left-over Stewed Apple: Beat together 3 ozs. butter and 1 small cup sugar, and add a beaten egg, followed by 10 ozs. flour (sifted), a pinch of salt, ½ teaspoon allspice, ½ teaspoon cinnamon, and 1 teaspoon baking soda dissolved in ¼ cup boiling water. Now add stewed apple (¾ cup) and a cup of chopped raisins (dipped in flour) and walnuts, stirring well. Pour into a buttered baking dish and bake in a moderate oven 50-60 minutes. Lower the oven heat if necessary, but do not remove from oven under 50 minutes or else the cake may not be thoroughly cooked.

CHEESE SOUP.

Left-over Cheese: Grate an onion and cook with a knob of butter in a quart of milk and water (equal parts) for a quarter of an hour. Mix 2 tablespoons of flour with a little milk and add gradually, stiring all the while till the soup thickens, then season with salt and pepper and add the grated cheese (4 ozs.) and continue stirring till the cheese is melted (do not boil). Sprinkle with chopped parsley before serving.

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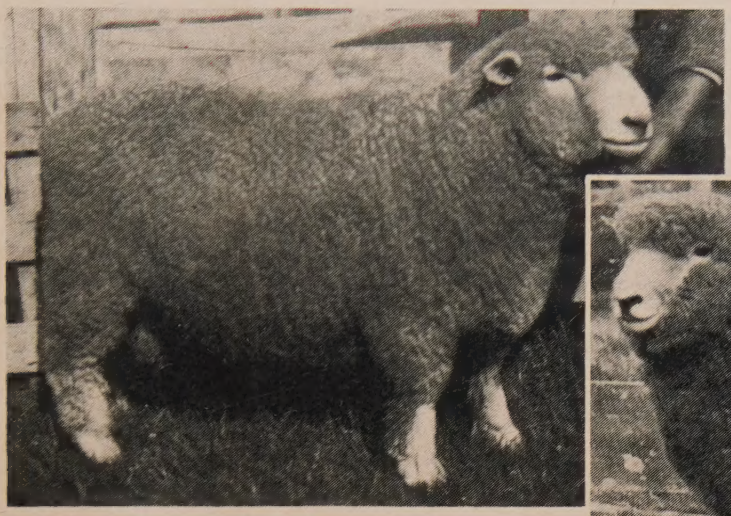

(Left): First Prize open shorn Romney Ram Hogget, Poverty Bay Show, 1943. Property of MR. A. KIRKPATRICK, Patutahi.

(Right): Stud Romney 2-tooth Ram, sold for 200 guineas at the 1944 Manawatu and West Coast Stud Sheep Sale. Bred by MR. T. E. CRAINE, Kiwitea, Feilding.

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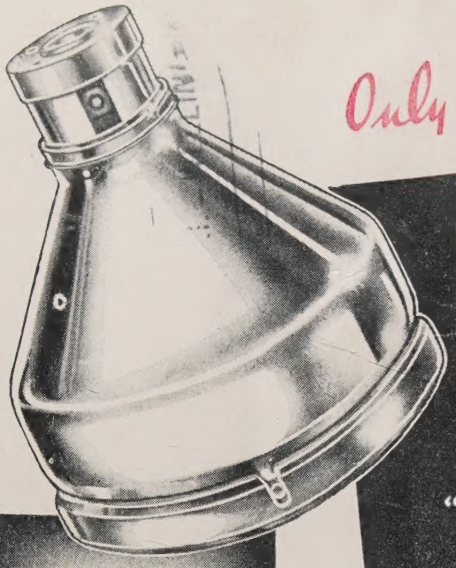

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